

Levers of Control
along with other
Management Models
&
Risk Management

May 04

John Driessnack

Outline

- **Tools for the Tool Box - how broad is your box!**
 - **Initial thoughts...take a broad view**
 - **Management Models - various articles/books**
 - **Robert Simons - Levers of Control**
 - **Driessnack Framework View**
- **Risk Management ... Overview of Theory and Models**
 - **Sources on the WEB ... lots of help/ ARQ articles**
 - **DoD Policy ... more emphasis, but can avoid!**
 - **Summary**

Management

1974

Peter F Drucker

- The FORD vis SLOAN (GM) Story..."Management is needed not only because the job is too big for any one man to do himself, but because managing an enterprise is something essentially **different from managing one's own property**" pg 384
- "Above all, disagreement is needed to stimulate the imagination. One may not need imagination to find the *one right* solution to a problem. But then this is of value only in mathematics. In all matter of **true uncertainty** such as the executive deals with - whether his sphere be **political, economic, social, or military** - one needs creative solutions which create a new situation. And this means that one needs imagination - a new and different way to perceiving and understanding." pg 473
- "...the effective **decision-maker compares effort and risk of action to risk of inaction**. There is **no formula for the right decision** here. But the guidelines are so clear...act if on balance the benefits greatly outweigh cost and risk; and act or do not act; but do not "hedge" or compromise." pg 476
- "As a specific discipline, management has its own basic problems, its own specific approaches, its own distinct concerns. A manager who understand the discipline of management will still be an effective - and may even be a first-rate - manager with no more than minimum competence in managerial skills and tools. A man who knows only the skills and techniques, without understanding the fundamentals of management, is not a manager ; **he is, at best a technician**."
- Management is **a practice** rather than a science. In this, it is comparable to medicine, law and engineering. It is not knowledge but performance. Furthermore, it is not the application of common sense, or leadership, let alone financial manipulation. Its practice is based both on **knowledge and on responsibility**."

Delusions of Success

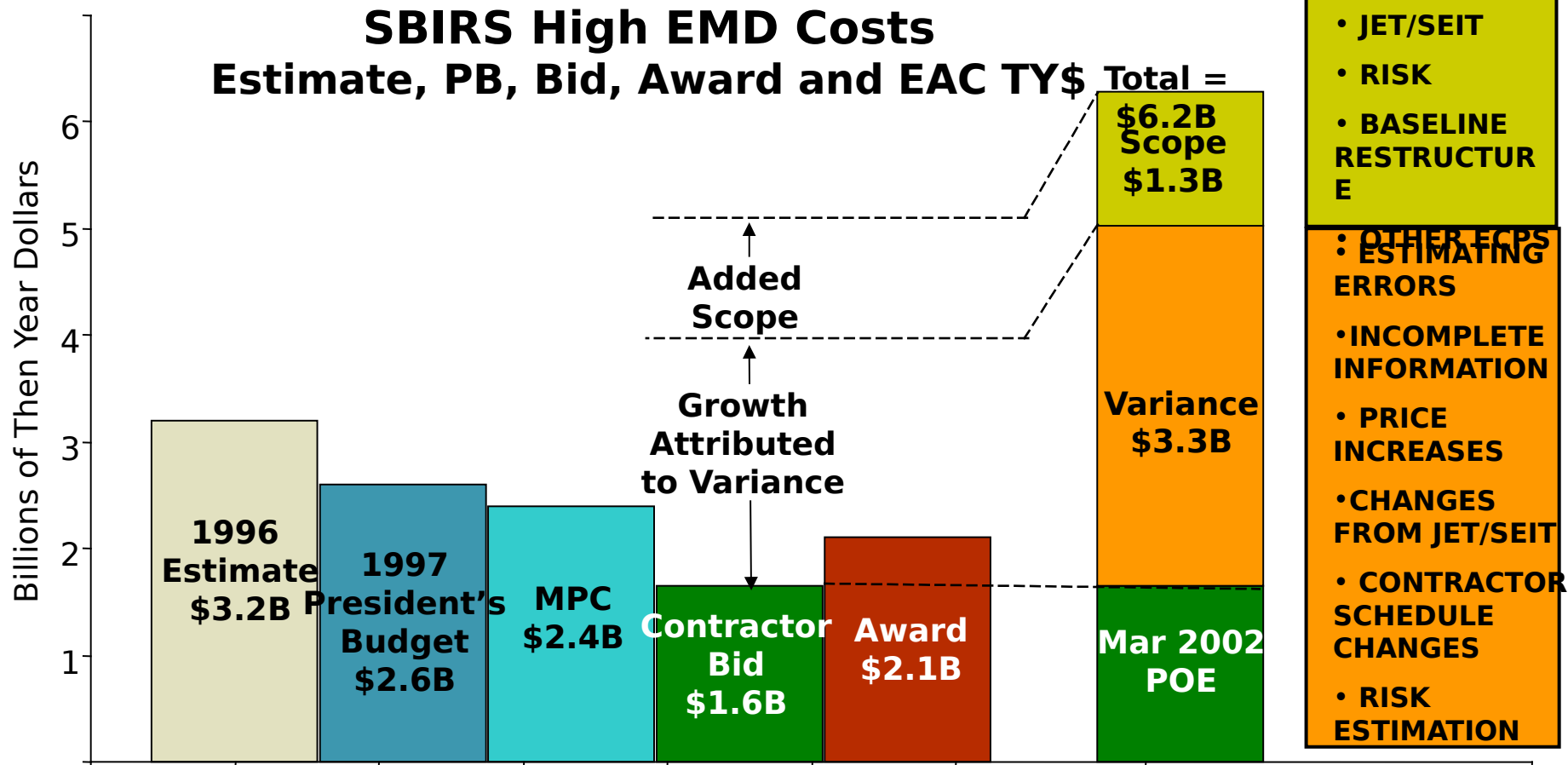
How Optimism Undermines Executive's Decisions

By Lovallo and Kahneman; HBR July 03

- **Lists numerous examples of failures in Industry**
- **Reject “rational risks in uncertain situations”**
- **Propose over optimism from cognitive biases**
 - errors in way mind processes information
 - organizational pressures
- **Problems**
 - **Anchoring** - initial plan accentuate the positive
 - **Competitor Neglect** - underestimation of negative events
 - **Organizational Pressure** - internal competition big incentive to accentuate positives in forecasts
- **Optimism in Its Place** - a distinction between
 - functions and positions that
 - involve decision making

SBIRS High Quantitative Framework

(A Point in Time)



Note: PB - President's Budget; MPC - Most Probable Cost; EAC - Estimate at Completion

(1) \$6.2B from 29 March 2001 SBIRS High Program Office Estimate (POE). Includes 3600, 3020 and SPO Cost funds (satellites 3,4, &

Other Sources: ABIDES; Source Selection Document; BAH analysis



Why Good Projects Fail Anyway

By Matta and Ashkenas; HBR Sept 03

- **Focus on “execution risks” and neglect;**
 - “white space risk” - unknowns
 - “integration risk” - disparate activities won’t come together
- **Suggest a “rapid-results initiative”...spirals!!**
- **Closing paragraph: “Attempting to achieve complex goals in fast-moving and unpredictable environments is humbling. Few leaders and few organizations have figured out how to do it consistently. ... Managers expect they will be able to identify, plan for, and influence all the variables and players in advance, but they can’t. Nobody is that smart or has that clear a crystal ball. They can, however, create an ongoing **process of learning and discovery**, challenging the people close to the action to produce results ... and**

Why Hard-Nosed Executives Should Care About

Management Theory

By Christensen & Raynor; HBR Sept 03

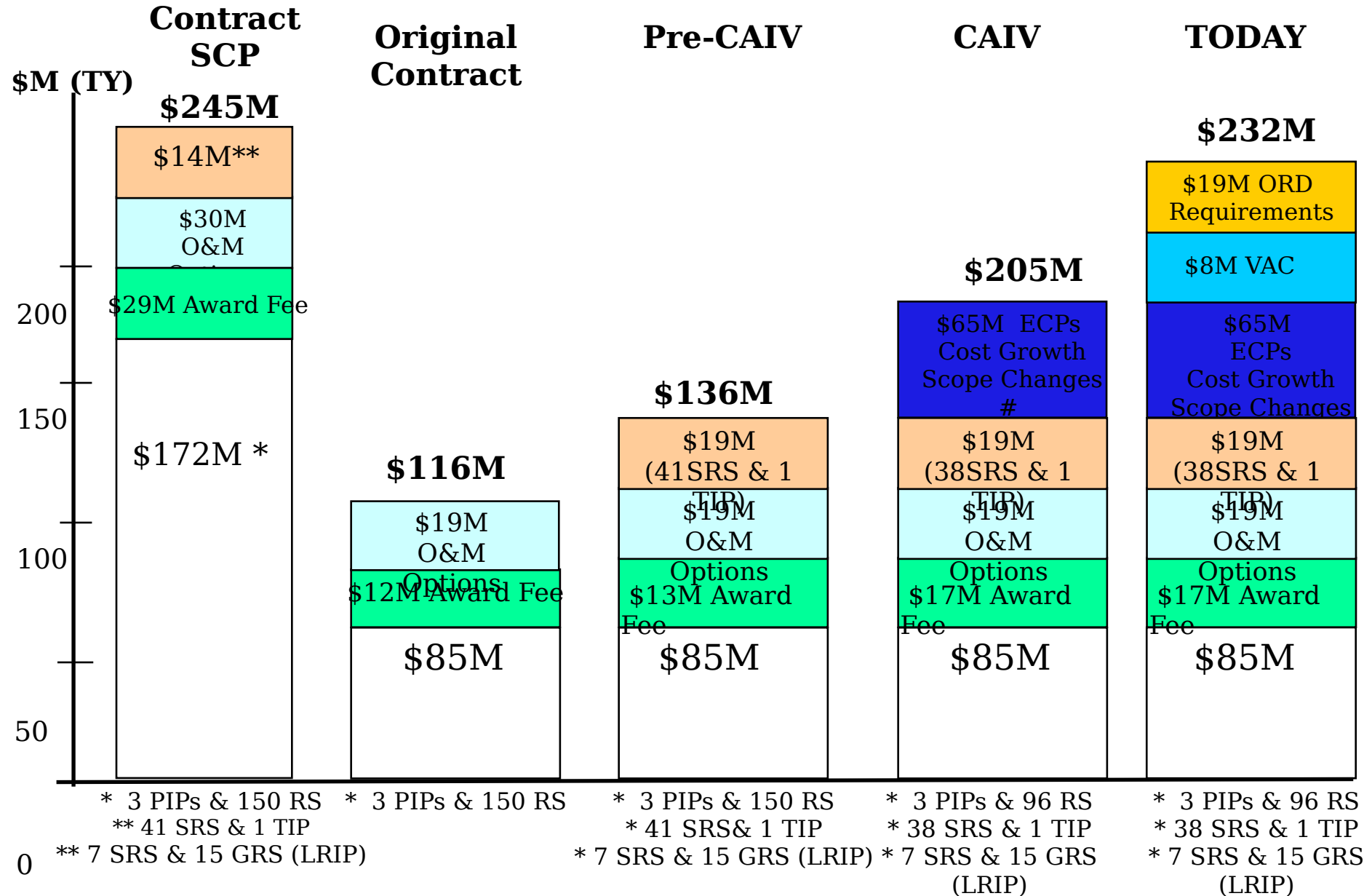
- **Understand more than jacket blurbs**
- **Need to “articulate a theory of causation”**
- **“Good theories are circumstance contingent”**
 - **“Under what circumstances will the use of this theory lead to failure?”**
- **Recommendations:**
 - **Go beyond description, explain what works under what circumstances**
 - **... fallacy of “all companies in all situations”**
 - **“Correlations that masquerade as causation...”**

What Really Works...4+2

By Nohria, Joyce, Roberson; HBR July 03

- Findings surprising, most tools no direct causal relationship. What matters is strong grasp of basics.
- Excel in primary management practices...the 4
 - **Strategy** - Devise and maintain a clearly stated focus
 - **Execution** - Develop/maintain flawless operational execution
 - **Culture** - Develop/maintain a performance-oriented culture
 - **Structure** - Build/maintain a fast, flexible, flat organization
- Secondary management practice...the plus 2
 - **Talent** - Winners hold onto talented employees/develop more

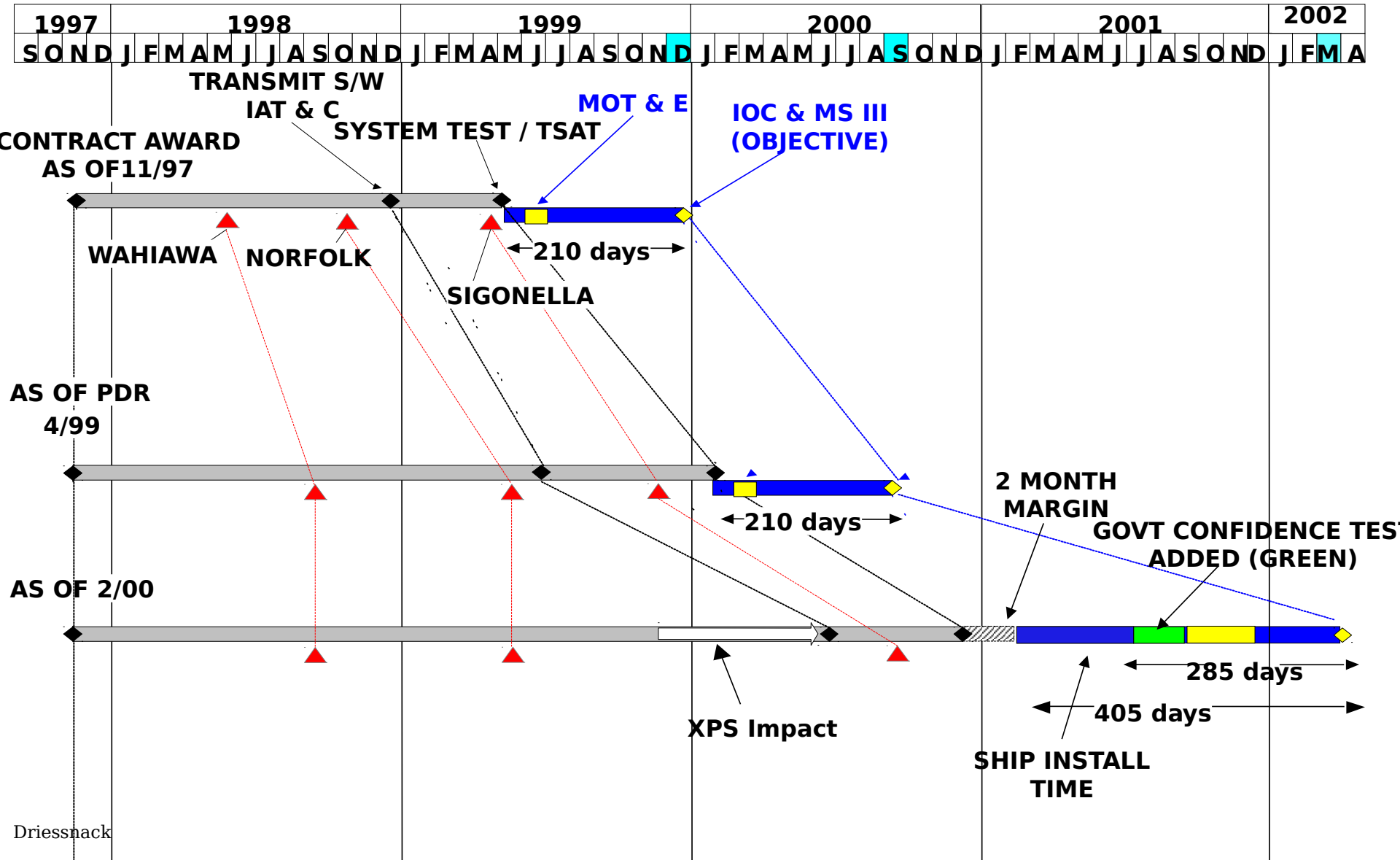
Contract Cost Track



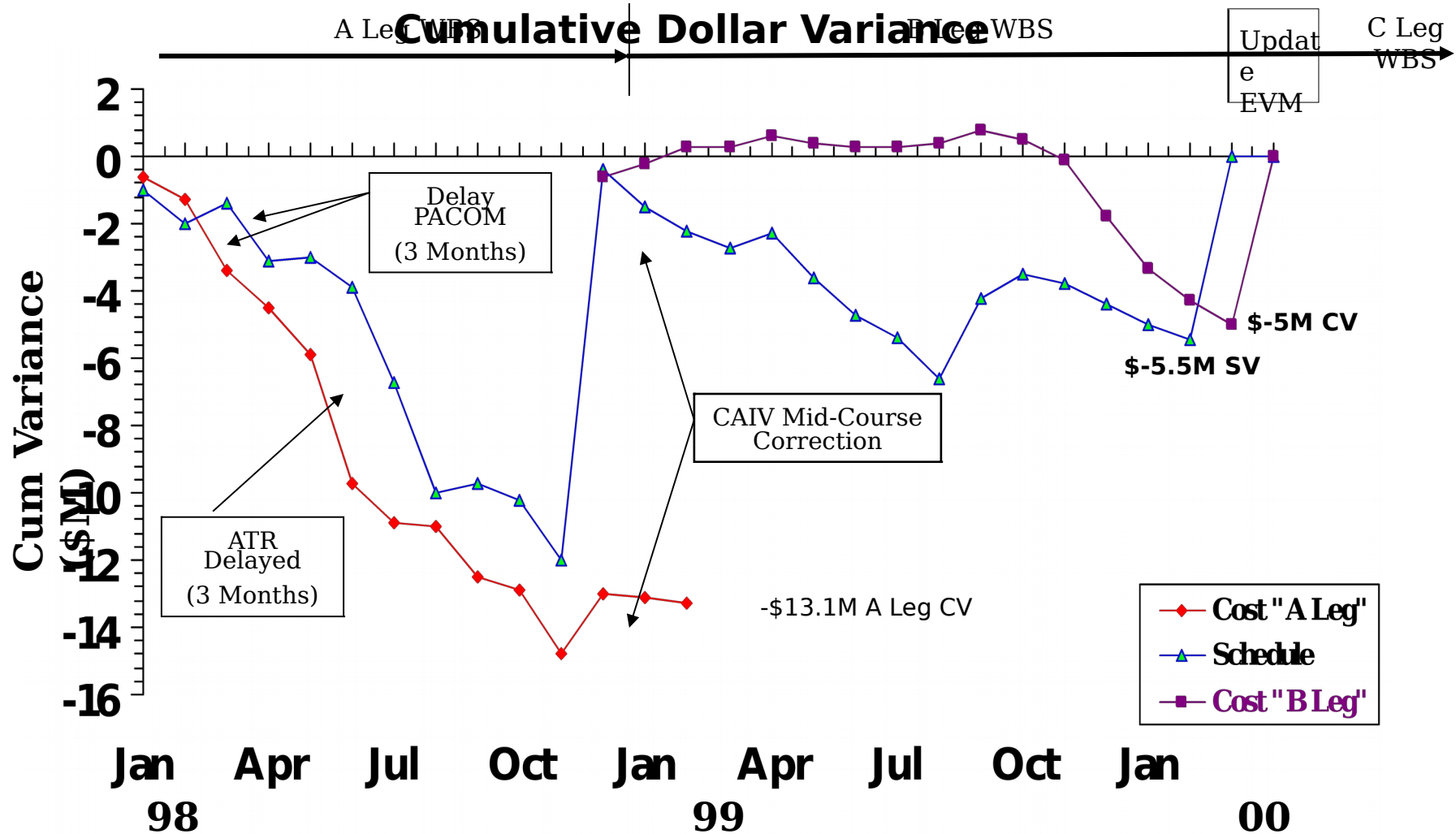
Driessnack # \$65M ECP Changes; 50% overrun, 50% scope change consisting of S/W growth, PMO and NR engineering

Schedule History

(as briefed on 3 May to DAE)



GBS EVMS Evolution



As of Jun 00
Rebaseline

**Simons, 94;
Figure 1**

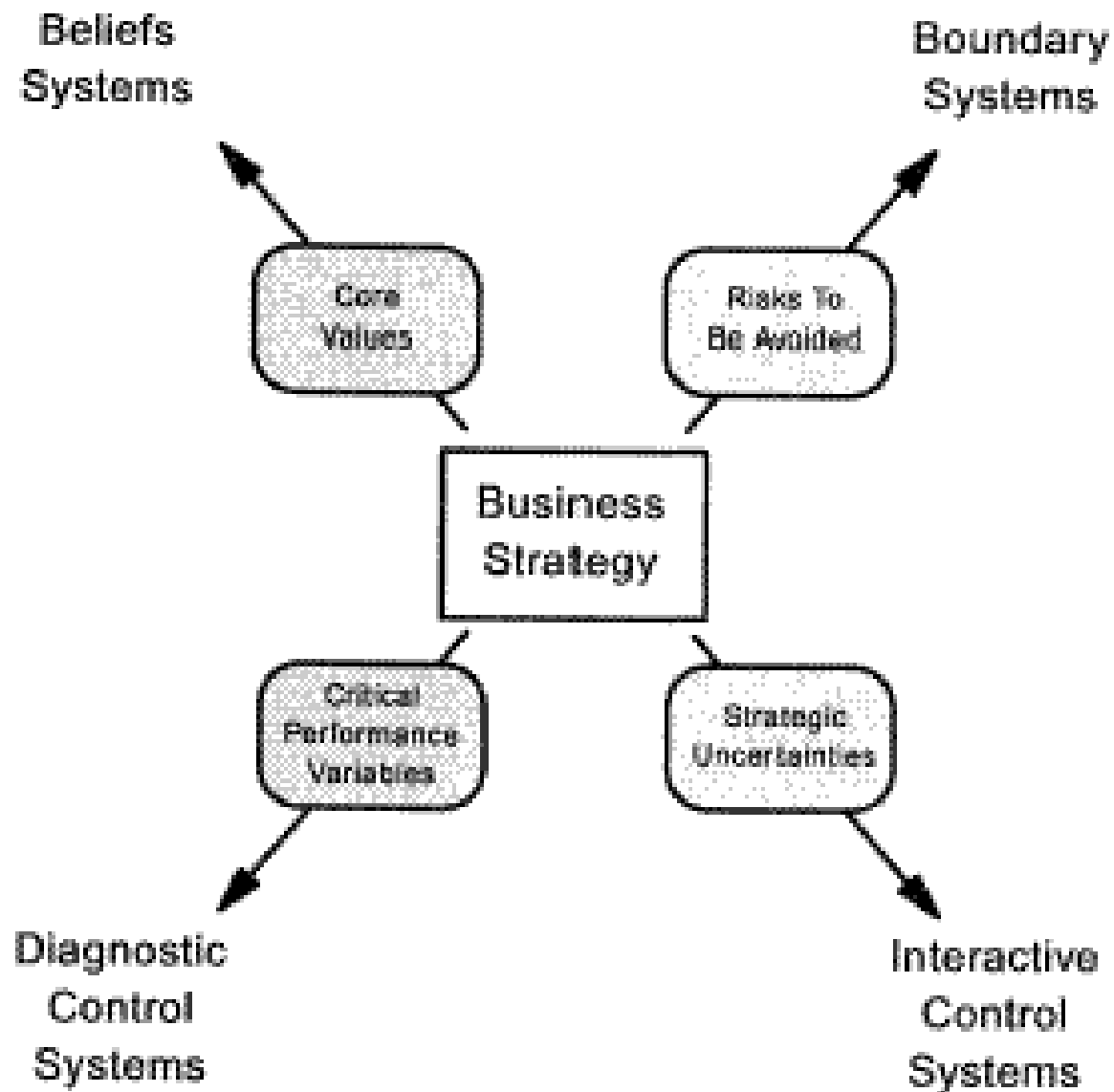


Figure 1. Controlling business strategy: Framework for analysis

Table 1. Characteristics of four categories of management control systems used by top managers

	Beliefs systems	Boundary systems	Diagnostic control systems	Interactive control systems
Nature of system:	Explicit set of shared beliefs that define basic values, purpose, and direction	Formally stated limits and rules that must be respected	Feedback systems used to monitor organizational outcomes and correct deviations from preset standards of performance	Control systems that managers use to regularly and personally involve themselves in the decision activities of subordinates
Purpose:	Provide momentum and guidance to opportunity-seeking behaviors	Allow individual creativity within defined limits of freedom	Provide motivation, resources, and information to ensure important organizational strategies and goals will be achieved	Focus organizational attention on strategic uncertainties and thereby provoke the emergence of new initiatives and strategies
Key design variables:	Core value	Risks to be avoided	Critical performance variables	Strategic uncertainties
Examples:	— Mission statements — Vision statements — Credo's — Statements of purpose	Clear rules, limits, and proscriptions in: — codes of business conduct — strategic planning systems — capital budgeting systems	— Profit plans and budgets — Goals and objectives systems — Project monitoring systems — Brand revenue monitoring systems	Top managers can make any control system interactive by: (1) ensuring that system is an important and recurring agenda to discuss with subordinates (2) ensuring that system is a regular focus of attention by operating managers throughout the organization (3) participating in face-to-face meetings with subordinates (4) continually challenging and debating data, assumptions, and action plans

Table 4. Summary of formal control system usage patterns by newly-appointed top managers

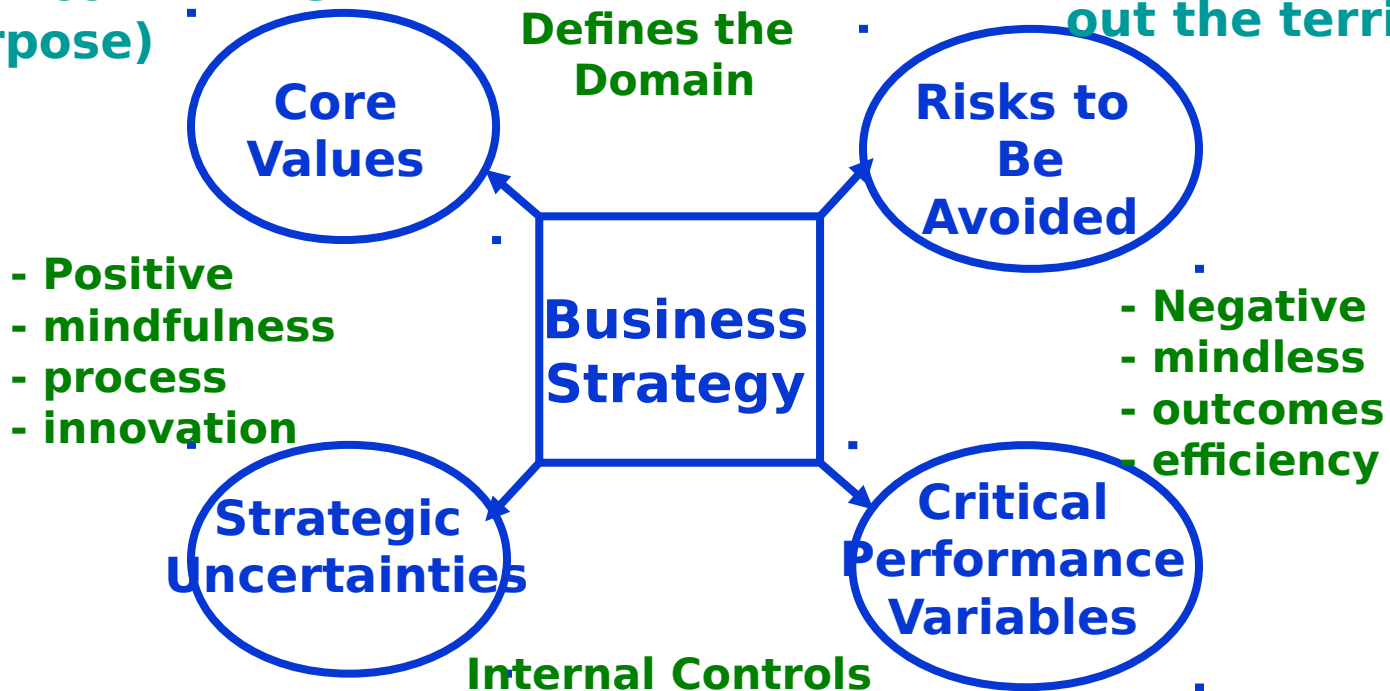
Purpose	Strategic turnaround mandate	Strategic evolution mandate
<i>First 12 months:</i>		
1. Overcome organizational inertia ↓	Formalize and communicate strategic boundaries ('thou shalt not . . .')	Link bonuses to financial targets Raise minimum performance levels for financial targets
2. Communicate substance of new agenda ↓	Formalize new strategy and communicate through new mission statements (beliefs systems) Use diagnostic control systems goals as road map in presentations to superiors	Issue planning guidelines to subordinates outlining new strategic initiatives
3. Establish implementation timetable and targets ↓	Based on commitments made to superiors, fix accountability targets with subordinates Link diagnostic control system targets to announced strategy	Use iterations of planning processes to test and teach new agenda Link diagnostic control system targets to announced strategy
4. Ensure continuing attention through incentives ↓	Alter bonus incentives to be subjectively determined based on effort and allegiance to new strategic agenda	Alter bonus incentives to be formula-based and linked to new, more demanding financial targets
<i>Second 12 months:</i>		
5. Focus organization learning on strategic uncertainties associated with vision for the future	Begin using one control system interactively to signal priorities and motivate internal debate and dialogue	Begin using one control system interactively to signal priorities and motivate internal debate and dialogue

Simons - Levers of Control

An integrated approach is required

RELIEF SYSTEM

Perspective - commitment
(in grand purpose)



BOUNDARY SYSTEM

(Position - staking
out the territory)

INTERACTIVE CONTROL SYSTEM

Patterns in Action - positioning for
tomorrow)

DIAGNOSTIC CONTROL SYSTEMS

(Plan - getting the Job done)

DoD Weapons Acquisition PM Framework Measures

Costs, Schedule, Performance

Product

Process

Defined - Stability

Repeatable

~~Accurate~~

Technology Challenge

People

Producer - Politics

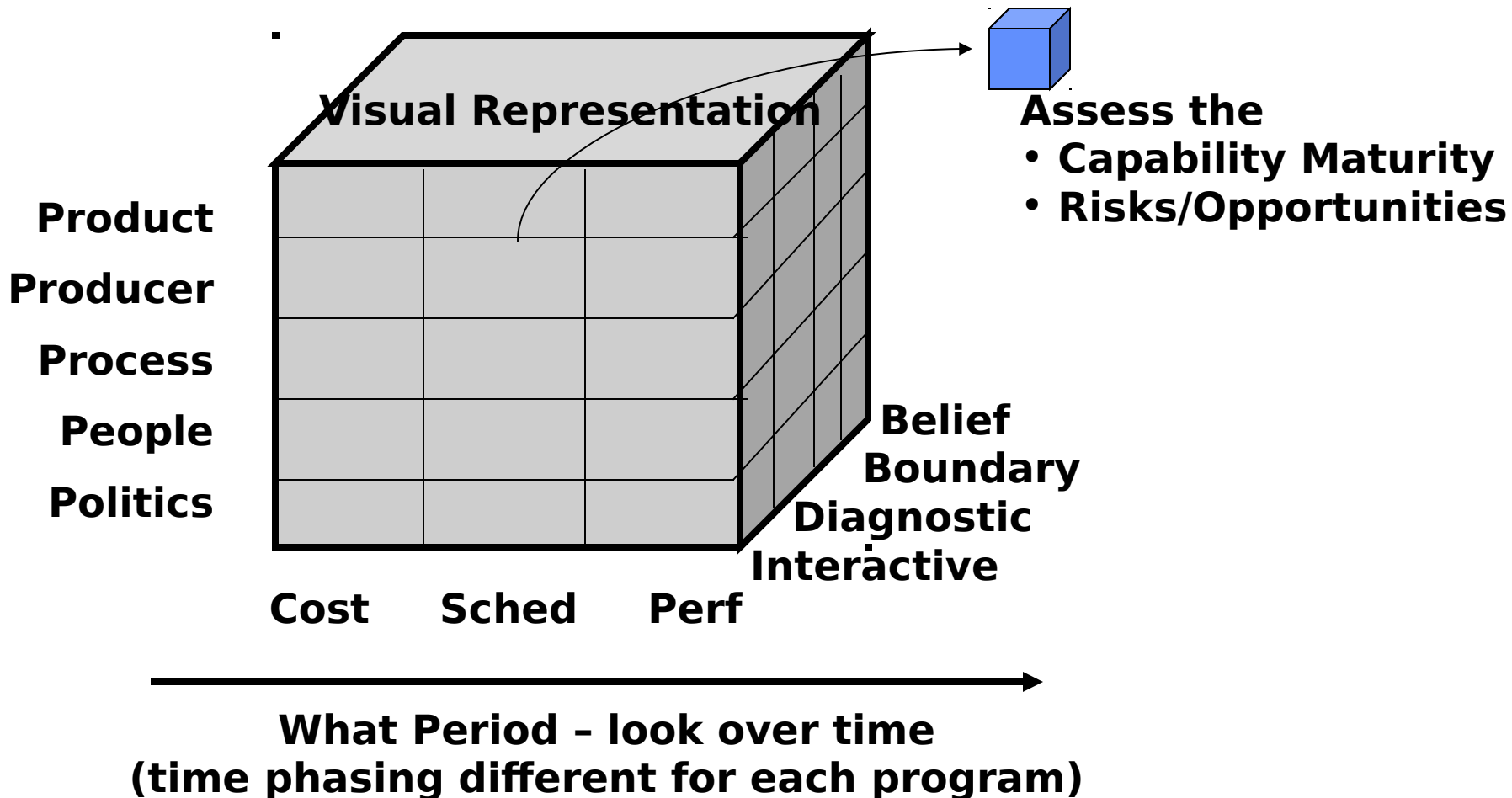
Tools

Training

WBS/EV

Management and Leadership over Periods
Integrated

Driessnack Framework View (visual - not really 5x3x4)



Capability Maturity Model

Generic view of levels

- **Level 1: Initial/Performed**
 - Simply performing processes in a manner that is often ad hoc
 - Competence/heroics of individuals doing the work drive activity
- **Level 2: Managed/Repeatable**
 - Processes managed, they are planned, performed, monitored, and controlled for individual projects and groups
- **Level 3: Defined**
 - Defines processes and tailors them based on organization set of standards. Deviations beyond allowed tailoring is documented
- **Level 4: Quantitatively Managed**
 - Control processes using statistical and other quantitative techniques. Process performance is understood
- **Level 5: Optimizing**
 - Continually improved based on understanding of variations

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Acquisition Review Quarterly

Special Edition on Risk - Spring 2003

- **Copy in Print or DAU web page (www.dau.mil)**
- **Editors - LtCol John Driessnack & Noel Dickover**
- **My two cents- quotes from article**
 - **...implementation of risk management is often shallow and not well integrated with other program management tools**
 - **Transparency relative to program status is going to increase as each service expands its information systems, ...**
 - **The emphasis on risk, realism, and knowledge-based acquisition has the potential to truly transform the way we view acquisition programs.**

Acquisition Review Quarterly

Special Edition on Risk - Spring 2003

- **Article from PMCoP Risk Community Members**
- **2nd - Research...“there was no correlation found between cost and schedule length. In addition, we did not find the anticipated connection between cost growth and schedule growth...”**
- **3rd - Overview that asks you questions about Managing Risk in a Program Office Environment**
- **4th - Seven specific issues relative to contracts and risk program**
- **5th - An approach that breaks out the business (project) and performance (product) side of decision supports**
- **6th - Industry view with PMI PM Body of Knowledge (PMBOK) and defense extension - comparisons**
- **7th - Normalize your measures with an Index to Measure a System's Performance Risk**



Acquisition Community Connection

Where the AT&L Workforce Meets to Share Knowledge

Defense Acquisition University



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Tools

Tools

Date Added: 2002-09-12 7:55 pm
Date Modified: 2003-06-18 4:04 pm

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[open](#) Topic

ID: 1510

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Many tools exist to help you with risk management tasks. We've listed a few of them on this page. Please help our list to grow by submitting your own favorite tool!

tools & forms

- [Active Risk Manager](#)
- [CT Risk Rating System to Rate Vendors and Vendor Performance to Facilitate Contract Management](#)
- [Probability/Consequence Screening \(P/CS\)](#)
- [Risk Matrix](#)
- [Risk Radar®](#)
- [Risk+](#)
- [RiskNav®](#)
- [RiskTrak](#)
- [Technical Risk Identification and Mitigation System \(TRIMS\)](#)
- [The Program Manager's WorkStation \(PMWS\)](#)

case studies

[Risk Management Software](#)

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This item has been **cross-referenced** to:



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August 2003

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Features

• [Active Risk Manager](#)

What's New

• [CT Risk Rating System to Rate Vendors and Vendor Performance to Facilitate Contract Management](#)

- Browse Topics**
- PM CoP**
- Program Management(88)
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PM CoP > Risk Management

Risk Management

Risk Management Community



★★★★★
open topic

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Features

- Risk Assessment for the Tiles of the Space Shuttle - 1994**
 - ESOH Risk MGT
 - Risk
 - Management under Evolutionary Acquisition (4) - There have been a number of ...
- Mr. Noel Dickover 2002-10-15

What's New

- RM Community Meeting 02-19-03
- RM Community Meeting 12-06-02
- RE: Requirements to Risk - Interesting brief...thanks for ...
- Professor John Driessnack 2003-02-21
- RE: EVM and

Topic Explorer

- ACC
 - Program Management(91)
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 - Risk Management(59)
 - RM Community Connection
 - Community Projects(1)
 - Risk and Opportunity Definition and Process Standardization Working Group(13)
 - Risk: Definition of Terms
 - Risk: Definition of Horizontal Process Steps(0)
 - Risk: Definition of Vertical Roll-Up Process Steps(0)
 - Risk: Definition of "Consequence"(0)
 - Risk: Integration With Other Processes(0)
 - Risk: Community Implementation(0)
 - Opportunity: Definition of Terms(0)
 - Opportunity: Definition of Process Steps(0)
 - Opportunity: Integration With Other Processes(0)
 - Opportunity: Community Implementation(0)
 - Systems Engineering(180)
 - Special Interest Areas(4)
 - User Info & Training(3)
 - Workspaces(50)
 - Job Announcements(12)
 - Glossary(16)

Site Map

ACC > Risk Management > RM Community Connection > Community Projects > Risk and Opportunity Definition and Process Standardization Working Group

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Risk and Opportunity Definition and Process Standardization Working Group

Defining Risk and Opportunity and Process Standards

☆☆ 0 ☆☆

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ID: 14050

Date Added: 2003-08-19 5:29 pm
Date Modified: 2003-08-20 5:50 pm

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The goal of this working group is twofold: a) to derive common definitions for risk and opportunity and to determine basic process steps for risk management and opportunity management; and b) to gain acceptance and implementation of these definitions and processes by the Risk community.

The point of contact for these discussions is Professor John Driessnack, Defense Acquisition University (john.driessnack@dau.mil).

Please join in these very important discussions. We want to know what you think!

On 19 August 2003, the Working Group held their initial meeting and compiled this list of issues, broken down between Risk and Opportunity. For more information, please click on the links:

Risk Definition and Process Standardization

- [Definition of Terms](#)
- [Definition of Horizontal Process Steps](#)
- [Definition of Vertical Roll-Up Process Steps](#)
- [Definition of "Consequence"](#)
- [Integration With Other Processes](#)
- [Community Implementation](#)

Opportunity Definition and Process Standardization

- [Definition of Terms](#)
- [Definition of Process Steps](#)
- [Integration With Other Processes](#)
- [Community Implementation](#)



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August 2003

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What's New

- [Opportunity: Community Implementation](#)
- [Opportunity: Integration With Other Processes](#)

Break Out One Step Added Implementation




```

graph TD
    H1[Handling] --> A[Assessment  
How to Assess]
    H1 --> H2[Handling  
How to Handle]
    A --> H2
    A --> MR[Monitoring/Reporting  
Where to Monitor/Report]
    H2 --> MR
    MR --> FC[Feedback Change]
    FC --> H2
    FC --> MR
    FC --> FC
    FC --> FC
    FC --> FC
  
```

The flowchart illustrates the Quality Improvement Process. It begins with a box labeled "Handling" at the top left. From this box, two arrows point downwards: one to a box labeled "Assessment" (with "How to Assess" written above it) and another to a box labeled "Handling" (with "How to Handle" written above it). From the "Assessment" box, two arrows point downwards: one to the "Handling" box and another to a box labeled "Monitoring/Reporting" (with "Where to Monitor/Report" written above it). From the "Handling" box, an arrow points down to the "Monitoring/Reporting" box. From the "Monitoring/Reporting" box, an arrow points down to a box labeled "Feedback Change". From the "Feedback Change" box, an arrow points up to the "Handling" box. From the "Feedback Change" box, an arrow points down to the "Monitoring/Reporting" box. From the "Feedback Change" box, an arrow points left to a box labeled "Feedback Change". From the "Feedback Change" box, an arrow points right to a box labeled "Feedback Change". From the "Feedback Change" box, an arrow points down to a box labeled "Feedback Change".


```

graph TD
    Planning --> Identify
    Identify --> Assess
    Assess --> Handle
    Handle --> Monitor
    Monitor --> Planning
  
```



```

graph TD
    RM[Risk Management] --> RP[Risk Planning]
    RM --> RA[Risk Assessment]
    RM --> RH[Risk Handling]
    RM --> RMon[Risk Monitoring]
    RA --> RI[Risk Identification]
    RA --> RAly[Risk Analysis]
    RMon -- Feedback --> RA
    RI --> RAly
    
```

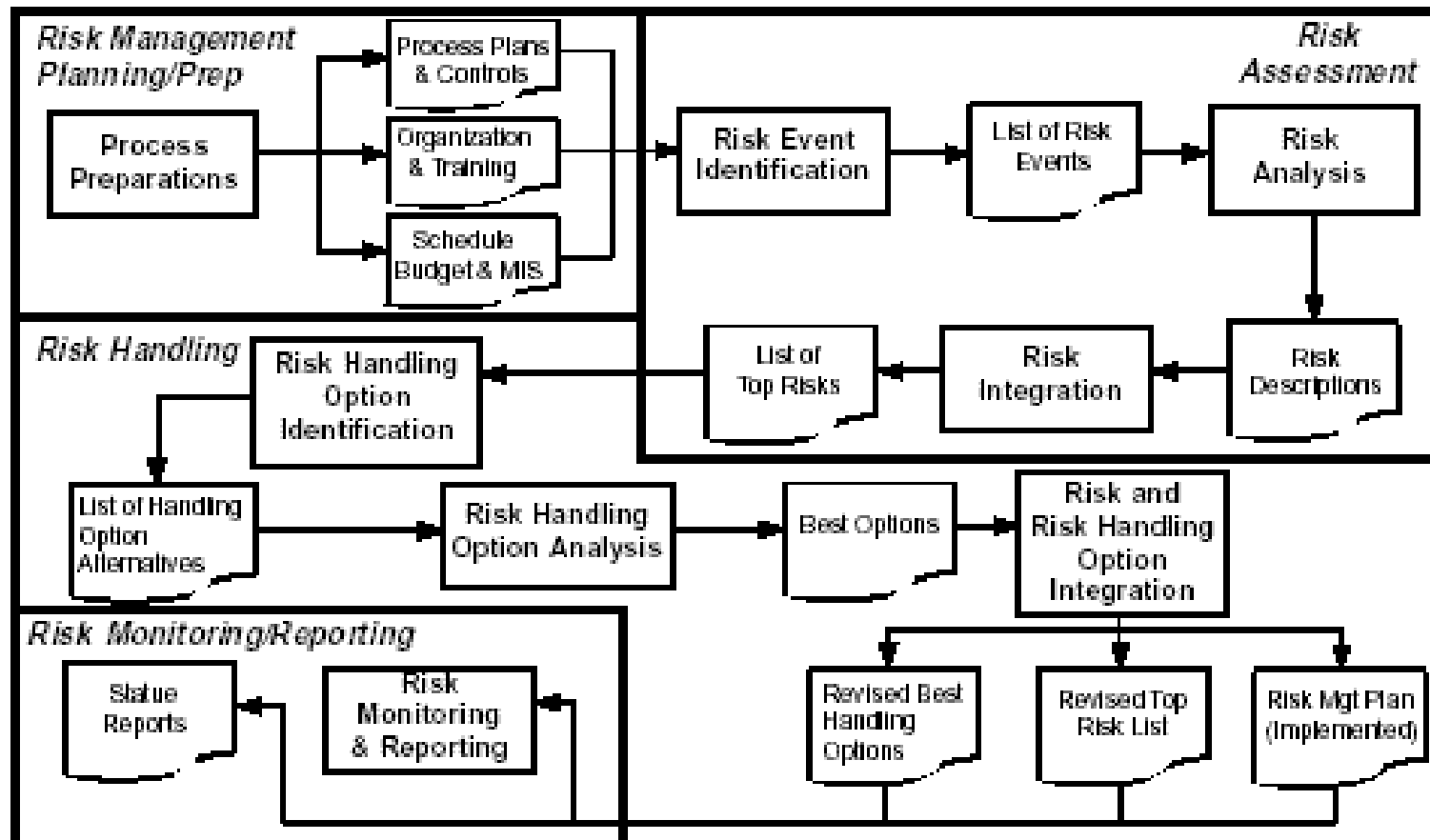
The Key to Risk Management is the Risk Assessment


```

graph LR
    A[Risk Identification] --> B[Risk Analysis]
    B --> C[Risk Tracking]
    C --> D[Risk Mitigation Planning]
    D --> E[Mitigation Plan Implementation]
    E --> A
  
```

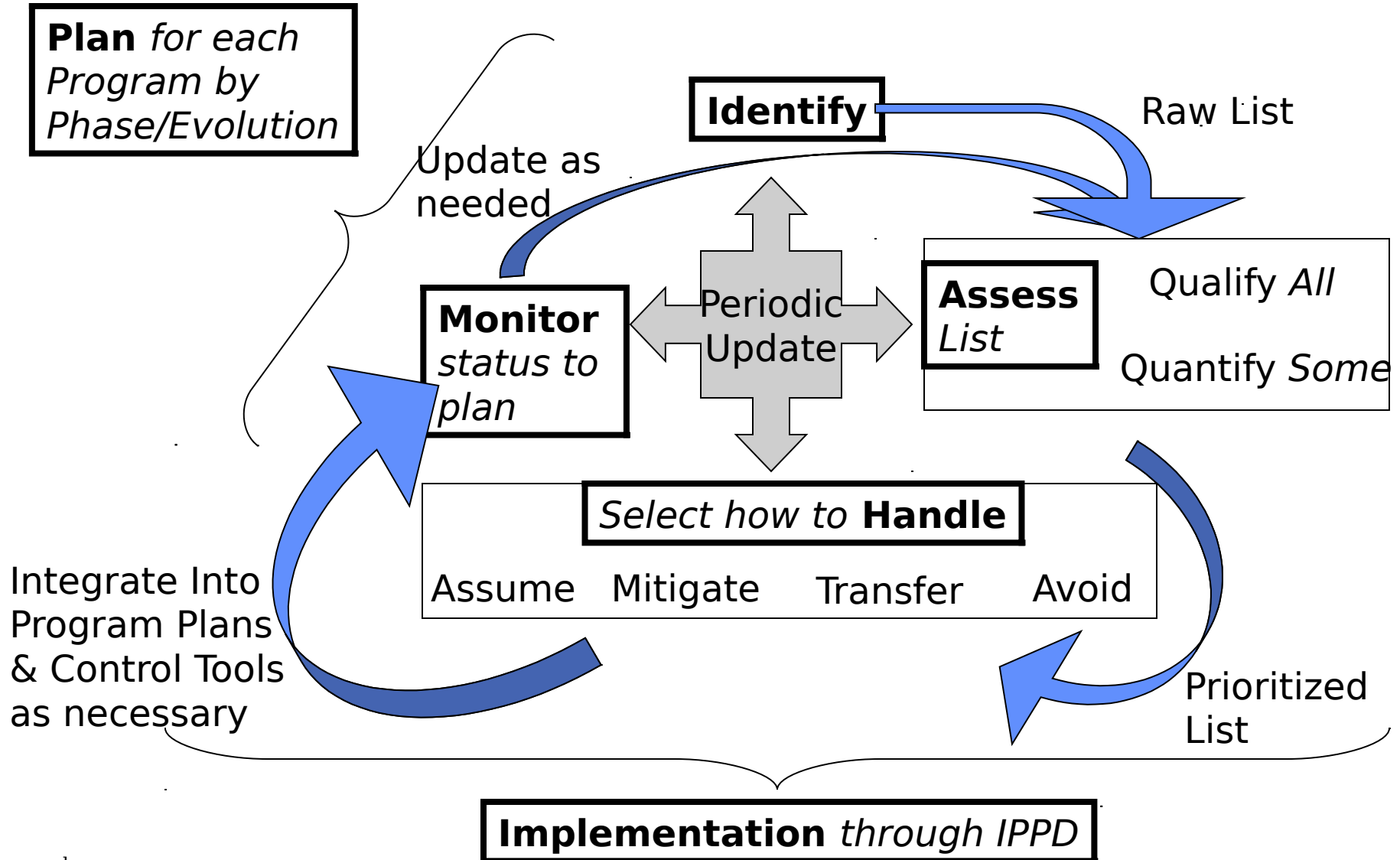
DAU PM Tool Kit Feb 2002

RISK MANAGEMENT PROCESS MODEL



Proposed Risk Management Process

Risk CoP Community Effort



Risk/Opportunity Analysis

Positive -- Consequence -- Negative

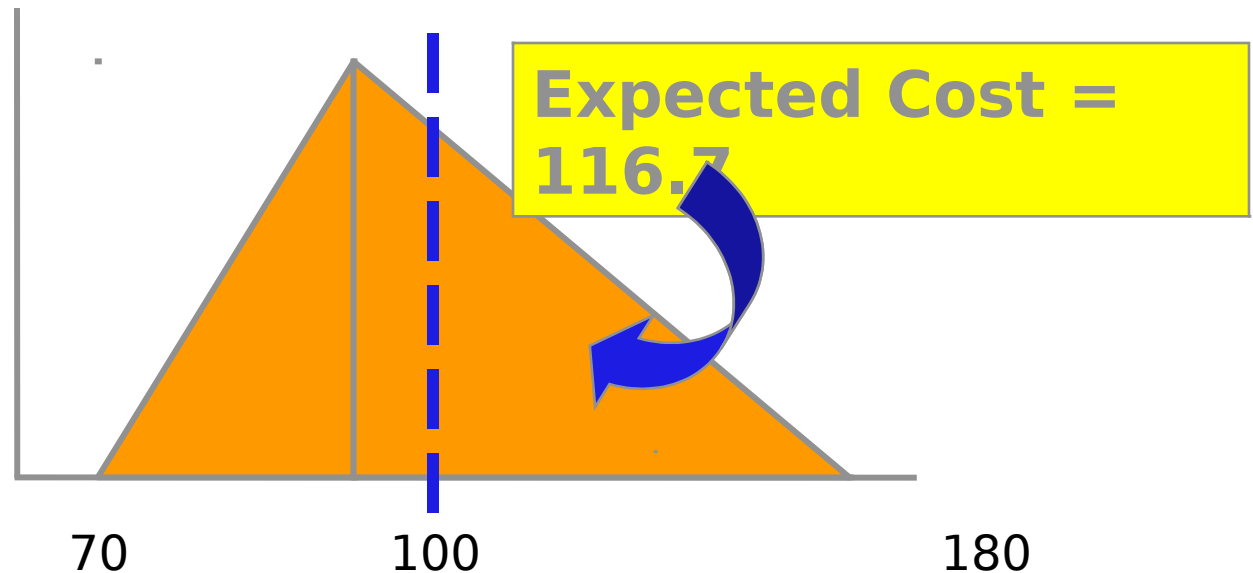
Very High Value	High Value	Moderate Value	Some Value	Limited Value

Probability

	Minor	Marginal	Moderate	Serious	Critical
Near Certainty					
Highly Likely					
Likely					
Unlikely					
Remote					

Need Unknown and Effect

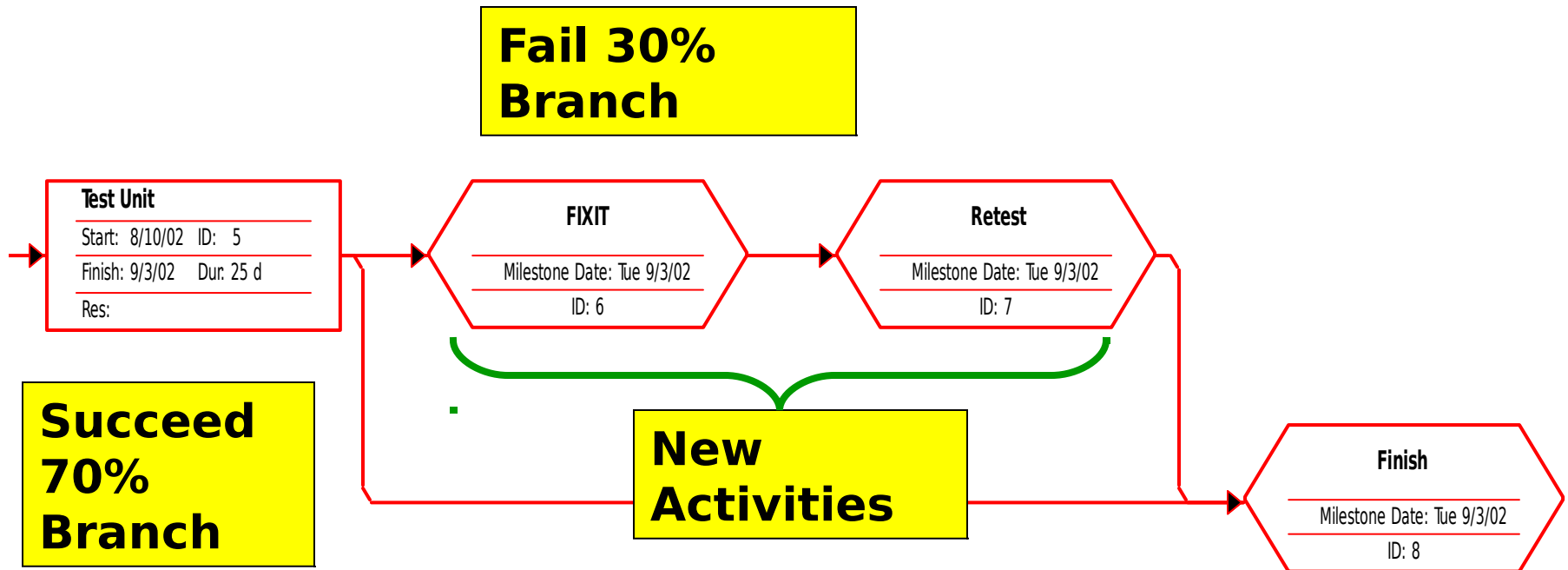
Some Analysis Using the Triangular Distribution



Average (expected) cost = (low + most likely + high) / 3

$$(70 + 100 + 180) / 3 = 350 / 3 = 116.7$$

Logic of Probabilistic Branch



Five Steps for Using Risk+

I. Plan your project

In order to use Risk+ you must have a project plan prepared in MS Project '98. The plan should have a complete critical path network in to achieve meaningful risk analysis results.

II. Select tasks for detailed analysis

Risk+ will collect and generate detailed statistical information for tasks you identify in this step. Typically, only the key or high risk tasks are analyzed, rather than analyzing all the tasks in the project plan.

III. Enter risk parameters

You must enter minimum, most likely, and maximum duration and cost information for each program activity (low level task). Additionally, you must specify the relative likelihood of outcomes within each range.

IV. Run the risk analysis program

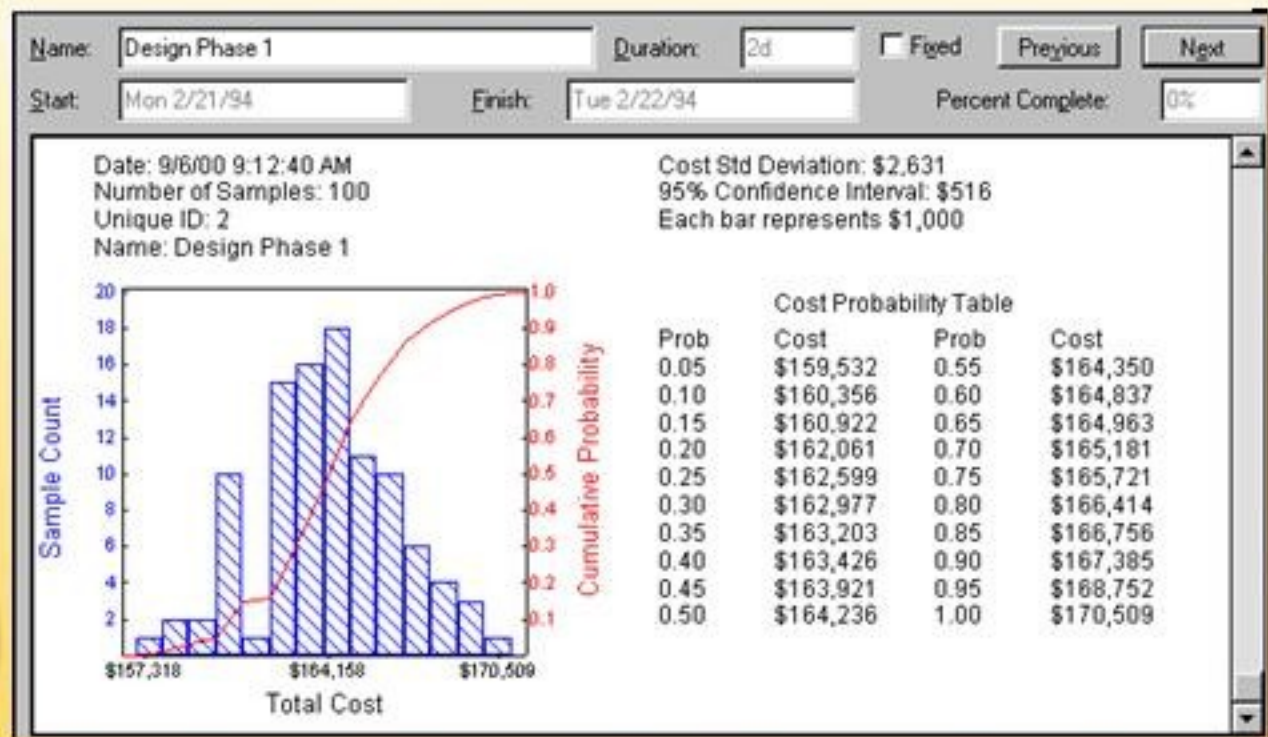
In this step, you tell Risk+ what analyses to perform, and how many possible outcomes to examine before generating its results.

V. Review risk analysis results

Risk+ generates a variety of graphical reports (histograms) which you can use to evaluate the effects of risk on your project.



Cost Histogram



The **Cost Probability Table** shows the probability that the task will be completed for a certain cost.

DoD “old” Policy

Selected References to RISK

- **DoDD 5000.1, The Defense Acquisition System**
 - 4.5. Effective Management....tailor considering risk
- **DoD 5000.2-R, Mandatory Procedures for MDAPs/MAIS**
 - Numerous references to RISK....management and mitigation
 - 1.2.4.2 Risk reduction in source selection criteria
 - 1.4.3.3.2 Cost Estimates include assessment of RISK
 - 2.3, 2.5, 2.9 Acquisition Strategy ...reduce System-Level risk to acceptable levels...industry bear risks
 - 5.2.3.4.3...establish a risk management process
 - 7.4 Exit Criteria
- **DoDD 5000.4, OSD CAIG**
 - The CAIG Chair report ... include **quantitative assessments** of risk...
- **DoD 5000.4-M, Cost Analysis Guidance and Procedures**
 - Para 1.E.1.2, ... Subsystem Description address risk issues
 - Para 1.E.2.0, Risk..PM assess & plan to address/reduce

DoD 5000.2-R

Exit Criteria

“Phased-specific exit criteria normally track progress in important technical, schedule, or management risk areas. Unless waived or modified by the MDA, exit criteria must be substantially satisfied for the program to continue with additional activities within an acquisition phase or to proceed into the next acquisition phase, depending on the decision with which they are associated. Exit criteria shall **not be part of the APB** and are not intended to repeat or replace APB requirements or the entrance criteria specified in DoD Instruction 5000.2. They shall not cause program deviations. The **DAES** (see paragraph C7.15.3. and Appendix 1) **shall report the status of exit criteria.**”

(5000.2-R, Para 7.4)

New 5000.2 - no mention of risk in criteria

Program Baselines

	Threshold	Objective
Performance	Minimum acceptable level which will meet user need	Cost effective increment in operational capability above threshold
Cost	RDT&E, MilCon, Proc & AUPC, PAUC Objective + 10%	Planned cost to meet program objectives
Schedule	6 Months beyond objective date (3 months for ACAT IA)	Planned event dates to meet program objectives

Does not represent the RISK on a Program

No baseline for, or tracking of Risk

New 5000.2 - no suggested 10% or 6 months

DoD “new” Policy

References to RISK - 22 to 22!

- 5000.1
 - 4.3.1 Flexibility ...no one best way
 - 4.3.2 Responsiveness ...time phased capability
 - 4.3.4 Discipline ...program goals for **minimum** number...
 - 4.5 Streamlined and Effective Management ...decentralize to maximum extent practicable
 - E1.5 Cost Realism...proposal that are **realistic**
 - E1.6 Cost Sharing...undue **risk** is not imposed (contractor)
 - E1.14 Knowledge-Based Acquisition...
 - Tech, Integration, and manufacturing **risk** reduced
 - E1.21 Program Stability ...**realistic** program schedules.
 - E1.27 Systems Engineering approach
- 5000.2
 - 19 references to Risk

Risk and Realistic in enough paragraphs?

DoD Acquisition Guide

..Draft Risk Areas

5.3.12.2 ESOH Risk Management

5.5.2 Management Activities

5.5.2.1 Risk Management

7.5 Human Systems Integration (HSI) Strategy, Risk, and Risk Mitigation

9.4 Acquisition Protection Strategy for PMs

9.4.4 Risk Management

11 Decisions, Assessments, and Periodic Reporting

- The review associated with each decision point typically addresses program progress and risk, affordability, program trade-offs, acquisition strategy updates, and the development of exit criteria for the next phase or effort.

12 Program Management Activity

12.4 Risk Management

PEO
XXX

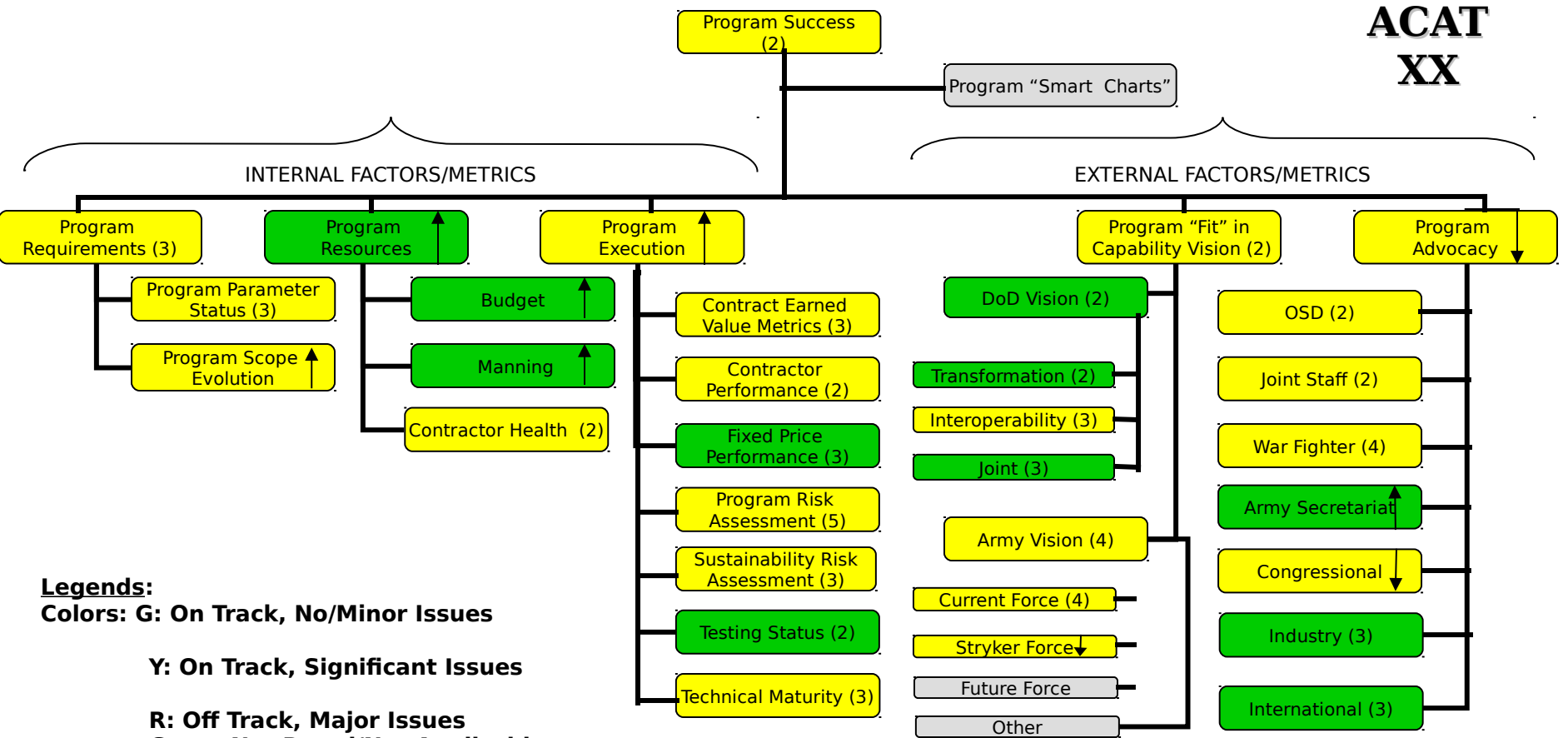
PROGRAM SUCCESS PROBABILITY SUMMARY

COL, PM

Date of Review: dd mmm

Program
Acronym

m
ACAT
XX



Legends:
Colors: G: On Track, No/Minor Issues
Y: On Track, Significant Issues
R: Off Track, Major Issues
Gray: Not Rated/Not Applicable
Trends: Up Arrow: Situation Improving
(number): Situation Stable
(for # Reporting
Periods)
Down Arrow: Situation
Deteriorating

Program Life Cycle Phase: _____

Balanced Scorecard Approach

(Proposed DoD Scorecard Areas)

Force Management Risk

- **Definition:** Challenge of sustaining personnel, infrastructure and equipment
- **Risk Mitigation Examples**
 - Manage careers and rotations
 - Modernize infrastructure and facilities
 - Training, spares and overall readiness

Operational Risk

- **Definition:** Challenge of deterring or defeating near-term threats
- **Risk Mitigation Examples**
 - Plan and prosecute war on terror
 - Elevate role of homeland defense
 - Develop forward deterrence posture
 - Enhance operational capabilities with Allies

Future Challenges Risk

- **Definition:** Challenge of dissuading, deterring, defeating longer-term threats
- **Risk Mitigation Examples**
 - Experiment with new concepts, capabilities and organizational designs
 - Investing in transformational capabilities for portions of the force
 - Foster a spirit of innovation and risk taking

Institutional Risk

- **Definition:** Challenge of improving efficiency represented by unresponsive processes, long decision cycles, segmented information, etc.
- **Risk Mitigation Examples**
 - Modernize financial management systems and approaches
 - Acquisition excellence initiatives
 - Improve planning and resource allocation

Intro Summary

Lots of information....

Several models to follow...don't be constrained

- **think about how to incorporate “opportunity”**
- **how to integrate across broad framework**

Get off point solutions...understand “range”

- **you pick the confidence level...not the technician**

Policy is not specific...may be changing

“Realistic” is the new buzz word...use it !

Outline

- **Tools for the Tool Box - how broad is your box!**
 - **Initial thoughts...take a broad view**
 - **Management Models - various articles/books**
 - **Robert Simons - Levers of Control**
 - **Defense Acquisition View**
- **Risk Management ... Overview of Theory and Models**
 - **Sources on the WEB ... lots of help/ ARQ articles**
 - **DoD Policy ... more emphasis, but can avoid!**
 - **Summary**

Parking Lot

Does your program have/had Risk Management Plan

- **Contractor plan or PROGRAM plan ?**
- **Are you following the plan? On all activities?**
- **Do you have a Risk Board/Panel/Group ?**
 - **How often does it meet ? Does it have influence**
 - **How many risks are you tracking ?**
 - **Do you quantify your risks?**

How integrated is your risk process with other tools

- **Do you quantify risk in your...**
 - **Cost/Budget Estimates ... Schedule/Network?**
 - **Requirements/Technical requirements matrix**
- **Do you force issues into your risk process?**
 - **What percentage of issues were foreseen?**

RISK IDENTIFICATION: Output-risk events

Use the yellow cards. Write one risk per card. Use complete sentences.
Do not discuss with your team...yet (take about 20 Minutes)



Risk Priority # _____		Work Package # _____	
1. Identify		WORK HERE	
Clearly Describe Risk Event			
Risk Areas	People_____	Process_____	Technology_____
2. Analyze			
Very Likely	3	1	
Not Likely	4	2	
	Little Impact	Big Impact	
Long Term _____		Short Term _____	
Program Phase(s) and/or Expected Date(s) of risk first occurrence _____			
Internal Control _____		External Control _____	
Are the causes of the risk event within or outside the control of program team?			

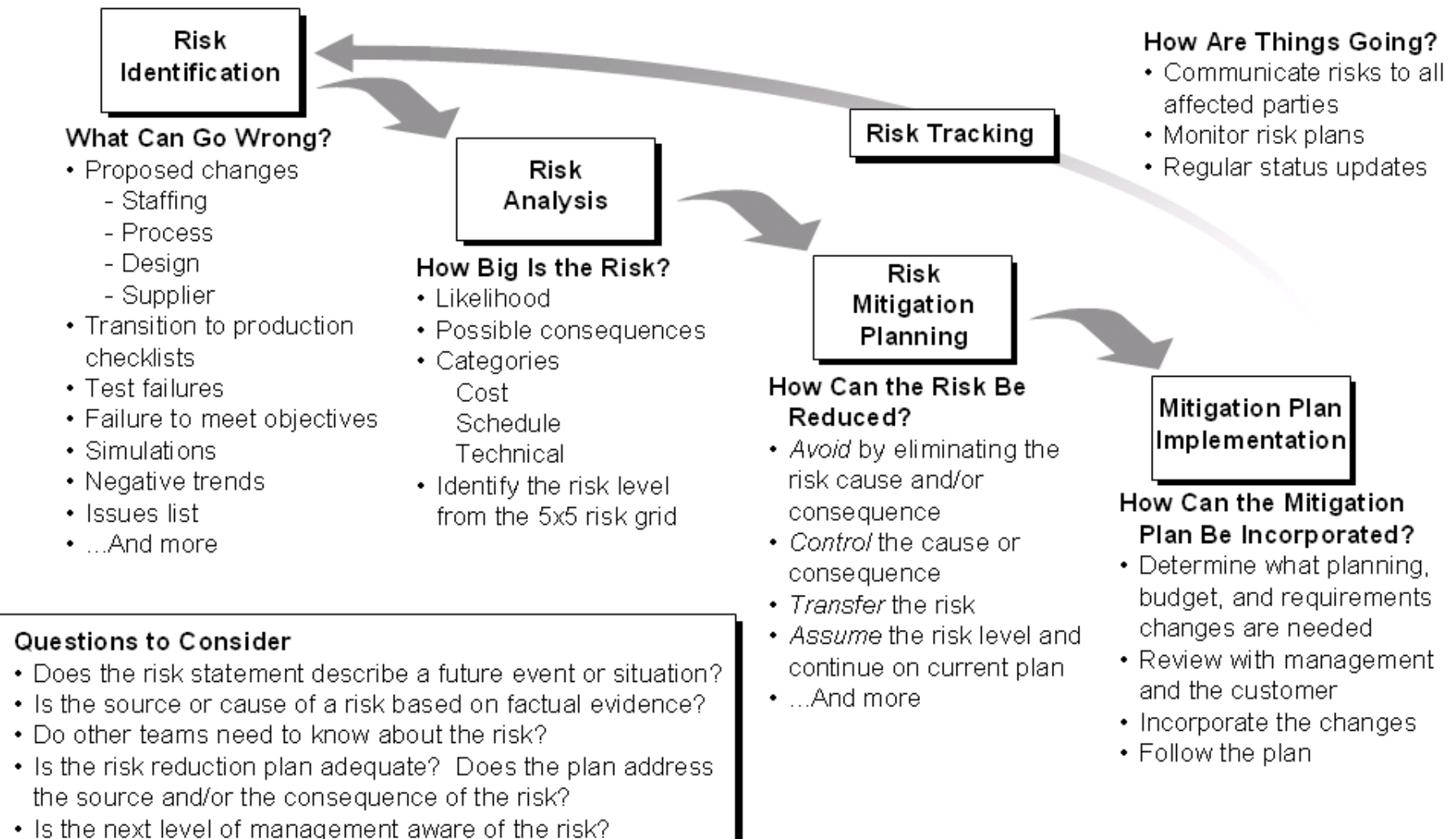
Also check if
The risk event is
PEOPLE
PROCESS OR
TECHNOLOGY

F/A-18 Risk Management Process



Risk: An undesirable situation or circumstance which has both a probability of occurring and a potential consequence to program success; risks are normally associated with uncertainties

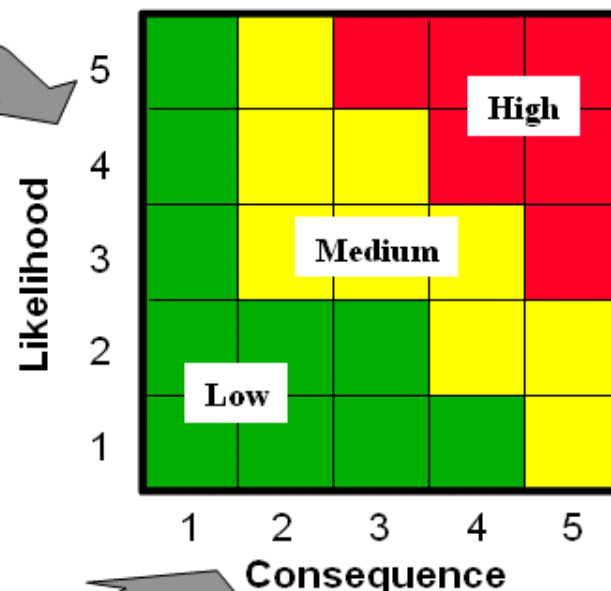
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F/A-18 Program Risk Analysis

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What is the likelihood the risk will happen?		
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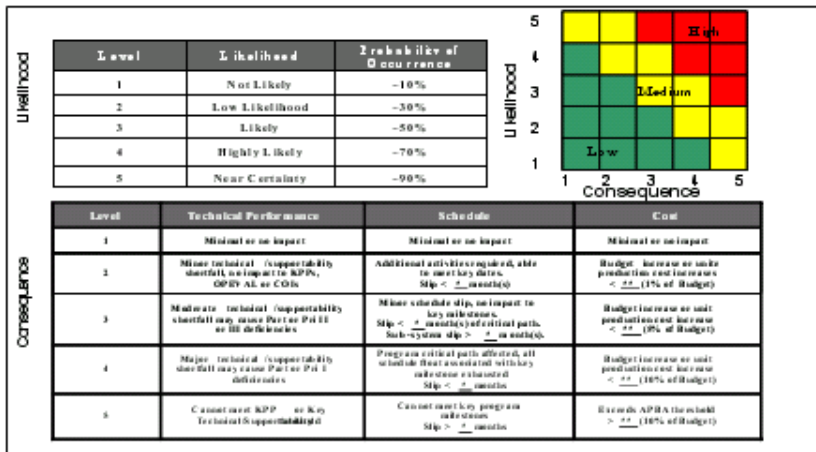


Consequence

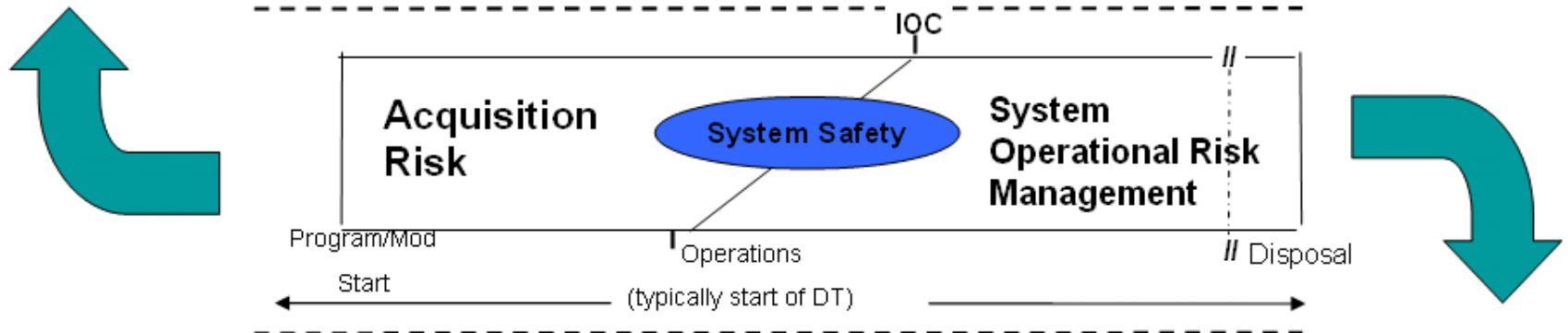
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Mike Danko	Veridian	301-866-5680
Jim Warren	Boeing	314-234-8754
Jo Anne Wood	NGC	310-332-9331
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Risk Life Cycle Overview

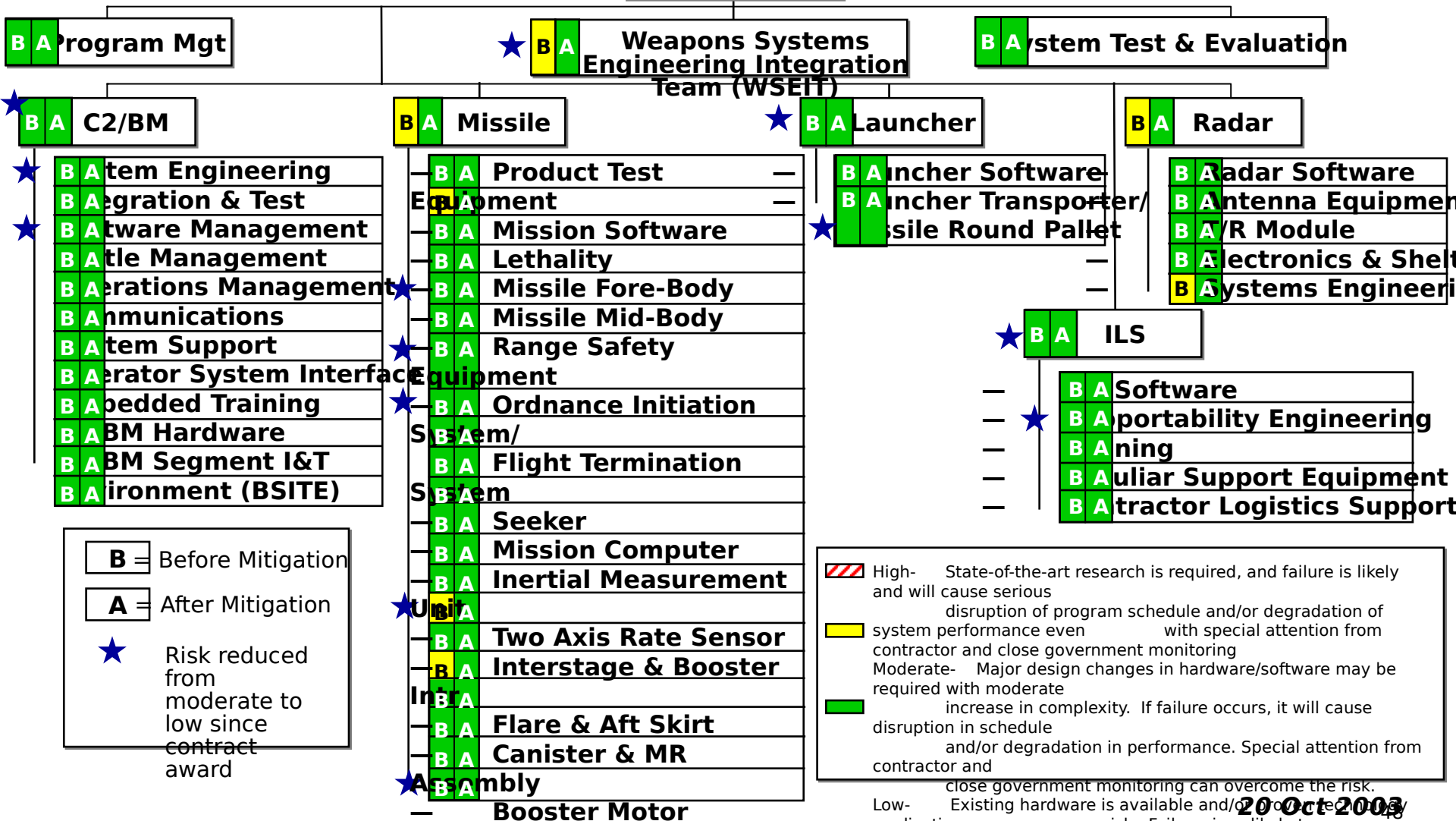


		SEVERITY			
		CATASTROPHIC	CRITICAL	MARGINAL	NEGLECTIBLE
		(1)	(2)	(3)	(4)
F R E Q U E N C Y	FREQUENT (A) = or > 100/100K ft hrs	1	3	7	13
	PROBABLE (B) 0-99/100K ft hrs	2	4	9	16
	OCCASIONAL (C) 1.0-9.9/100K ft hrs	4	6	11	18
	REMOTE (D) 0.1-0.99/100K ft hrs	8	10	14	19
	IMPROBABLE (E) = or < 0.1/100K ft hrs	12	15	17	20

UNCLASSIFIED THAAD Development Program Risk

Asset: THAAD System (U)

THAAD 02T-1036.02a

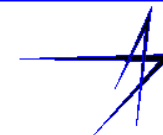




Risk Title: **DACS DCS Thruster Redesign**

LMMS ID No.: **631**

Missile Segment: **Missile**



Risk Description:

Divert Control System (DCS) thruster design engineering testing indicated combustion instability. Risk is number of design iterations required to tune acoustical cavities for MON-25 DCS design.

Potential Impact:

Schedule and cost impacts associated with achieving technical requirements.

Mitigation Planning and Status

Step	Completion Dates		
	Estimated	Actual	Step %
1 Begin fault tree analysis	03/30/03	03/02/03	1
2 Perform MON-10 to gain insight	04/25/03	04/25/03	1
3 Define cavity modifications	04/30/03	04/30/03	1
4 Modify injectors for retests	05/10/03	05/10/03	1
5 Develop test plan with various cavity sizes	05/17/03	05/13/03	1
6 Perform DCS test with 0.365 cavities	05/29/03	05/21/03	5
7 Perform DCS test with 0.400 cavities	06/12/03	06/09/03	5
8 0.400 Equivalent cavity test results review	06/20/03	06/20/03	5
9 Perform DCS test with 0.280 cavities	06/30/03	06/27/03	5
10 Investigate 0.400 equivalent cavity 27 kHz response	07/08/03	07/08/03	5
11a Initial Large Open Area Bi/Tri-tuned testing	09/09/03	09/08/03	10
11b Perform lower MON levels survey	09/30/03		15
11c ACS look-a-like testing	10/30/03		15
11d Center Core DCS testing	11/17/03		15
12 Execute backup plan, if required	11/20/03		15

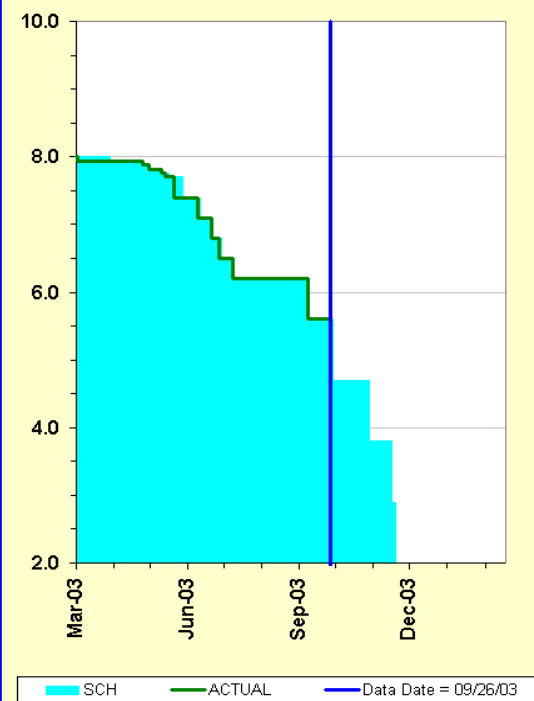
Closure Criteria:

DACS prototype test demonstrates combustion stability

Retirement Justification:

Risk Areas	Complexity Factor	Program Risk Rating	
Technology		MODERATE	
Design & Eng	7		
Performance	8		
Manufacturing			
Supportability		Overall CF	
Schedule	6	Original	Current
Cost	6	8.0	5.6

Risk Reduction Schedule



Responsible Risk POC: John Shoults - (408) 743-0949

RISK ASSESSMENT

Sub-process: **Identification**

- What Are the **Risk Events** in the Program?
 - Known / Knowns ... Known / Unknowns
 - Unknown / Unknowns (uncertainty....)
- Where Are **Risk Events** Located in the Program?
 - Technology, Design, T&E, M&S, Cost, Funding, Schedule
 - The IPPD process and empowerment...but measure!
 - Program Office Structure - Functional or Product or both
 - Oversight and Politics...MDA/Space making major changes
 - US or World Markets - IT (hot/cold cycles)
- Examine Sources/Areas of Risk
 - Tactical and **STRATEGIC** (inside/outside PM Office)
 - Product or **Process** (predicts the product problems)

Don't narrow vision of your Risk Program

Understand External Risk

In each decision system

- **Requirements Generation - JCS/Service Chief Oversight**
 - **Requirements Generation System (CJCSI 3170.01B)**
 - **Track beyond your KPP/thresholds**
 - **What is the changing environment - Crusader!**
 - **Interoperability and Supportability of National Security Systems, and Information Technology Systems**
 - **Worry about the “other guy”...two in “interoperability”**
- **PPBS Process - SECDEF Oversight and Politics**
 - **There really is no book! A Political “Free” Market!**

Technology Readiness Levels

(TRL)

- **TRL #1** - Basic principles observed & reported
- **TRL #2** - Technology concept and/or application formulated
- **TRL #3** - Analytical & experimental critical function and/or characteristic proof of concept
- **TRL #4** - Component and/or breadboard validation in laboratory environment.
- **TRL #5** - Component and/or breadboard validation in relevant environment
- **TRL #6** - System/subsystem model or prototype demonstration in a relevant environment
- **TRL #7** - System prototype demonstration in an operational environment
- **TRL #8** - Actual system completed and qualified through test & demonstration
- **TRL #9** - Actual system proven through

(basic research)

(applied research)

(advanced technology development)

(Component Advanced Development)

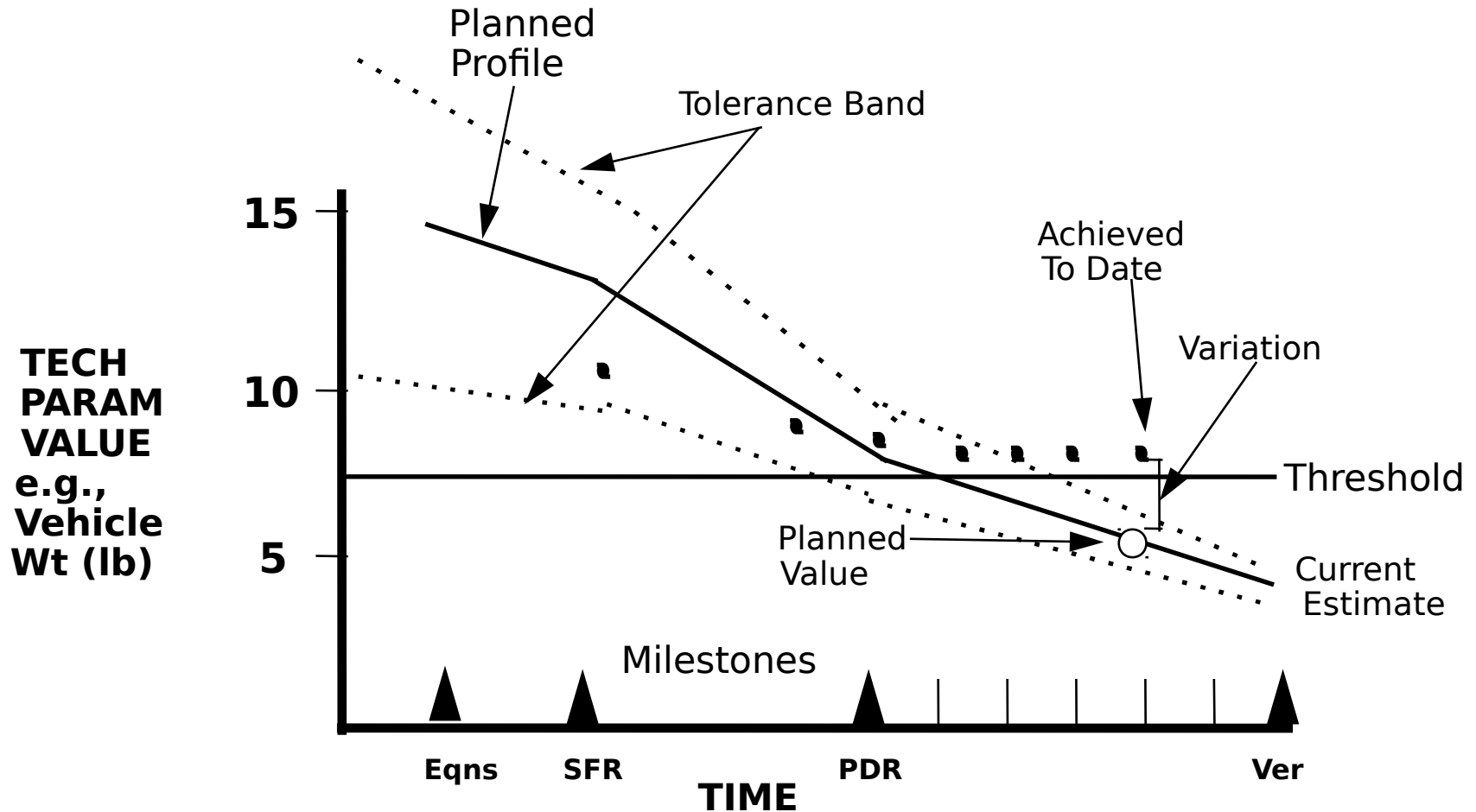
(ATD/ACTD/
System Integration)

(System Demonstration)

(IOT&E during LRIP)



Technical Performance Measurement



Normalize and track on index (like SPI & CPI)

Driessnack's Thoughts

...why EV evolved for 35 plus years

- **Tracks programs on THEIR baseline, not rubrics**
 - **Rubrics - such as OSD O&E rates - drive behaviors**
- **Want program managed to particular baseline**
 - **Normalize the metric**
 - **EV CPI/SPI track to the plan**
 - **TPMs that are normalized (see ARQ article)**
 - **O&E rates could be normalized to plan**
 - **....almost anything can be put into an index**
 - **Index (normalization) allows comparisons**

Driessnack's Thoughts

...why EV evolved for 35 plus years

- **AT&L Staff working on next CARS (DAES/SAR) system**
 - **What data is needed...what process is needed...?**
- **EV has method of validating the overall process**
 - **Improve trust in the data reported...know detail exists**
 - **Reputation dependent on validation...real impacts**
 - **Need to incorporate RISKS into baselines... ranges!**
- **Industry builds tools to comply with criteria...**
 - **Need new criteria that drives industry to**

Outline

- **Overall goal - integration of tools**
 - **WUG ...**
 - **Integrate Risk into EV develop RPI & TPI**
 - **CS Solutions - Risk+ schedule inside wInsight**
 - **DoD baselines and tracks programs...risk neutral!**
- **Discuss of Risk**
 - **What is taught....some program examples**
 - **Various Management Tools not integrated**
- **General Proposal...beyond risk**

Tools: Program Management Community of Practice (3.03a) - Microsoft Internet Explorer provided by Defense Acquisition Universit

File Edit View Favorites Tools Help

Back Forward Stop Home Search Favorites Media Print View Source

Address http://pmcop.dau.mil/simplify/ev.php?URL_ID=1510&URL_DO=DO_TOPIC&URL_SECTION=201&reload=1057084259 Go

Links DAU eMTS Customize Links Free Hotmail RealOne Player Windows Media Windows

Topic Explorer

PM CoP

Program Management(86)

Contract Management(67)

Risk Management(55)

Tools(12)

Systems Engineering(180)

Total Ownership Cost(10)

Special Interest Areas(3)

User Info & Training(2)

Workspaces(40)

Job Announcements(12)

Glossary(16)

Site Map

PM CoP > Risk Management > Tools

Tools

Tools

Date Added: 2002-09-12 7:55 pm

Date Modified: 2003-06-18 4:04 pm

Printer friendly version

☆☆☆☆☆☆ open Topic ID: 1510

Comment on this page. (1 comment)

Many tools exist to help you with risk management tasks. We've listed a few of them on this page. Please help our list to grow by submitting your own favorite tool!

tools & forms

Active Risk Manager

CT Risk Rating System to Rate Vendors and Vendor Performance to Facilitate Contract Management

Probability/Consequence Screening (P/CS)

Risk Matrix

Risk Radar®

Risk+

RiskNav®

RiskTrak

Technical Risk Identification and Mitigation System (TRIMS)

The Program Manager's WorkStation (PMWS)

case studies

driessnack (Suggest and Discuss) | Log out

July 2003

		1	2	3	4	5
6	7	8	9	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28	29	30	31		

Tools

Members

Find in Discussions

Filter

Calendar

Email Groups

Features

Active Risk Manager

Participate

Add a Knowledge Object

Subscribe to this Topic

Join a Discussion (1)

Rate this Page

E-mail this Page

Email Groups

Who's Online?

Edit this Topic

Editors of this Topic

Col. (USMC Ret) Bill Bahnmai

Most trying to integrate with other tools...schedule, cost, TPMs, etc

RISK REDUCTION TOOLS

- RIGHT PARTNERS (CPAR)
- RISK MANAGEMENT PLANS/TEMPLATES
- TPMs
- EARNED VALUE ANALYSIS
- COMMUNICATION
 - Insight not Oversight
- TESTING AND MORE TESTING

***.....ALL COMBINE TO YIELD AN
INTEGRATED APPROACH TO
DEVELOPING AN AFFORDABLE FAMILY
OF***

Chart from Major DoD Program

RISK REDUCTION TOOLS

- RIGHT PARTNERS (CPAR)
- RISK MANAGEMENT
- PLANS/TEMPORARY
- TPMs
- EARNED VALUE
- COMMUNICATIONS
- Insight not only
- TESTING AND MORE

Programs
must understand they
must integrate

**.....ALL COMBINE TO YIELD AN
INTEGRATED APPROACH TO
DEVELOPING AN AFFORDABLE FAMILY
OF**

Chart from Major DoD Program

.... Risk Management Process from ...

Input

Process

Output

Risk Management Board (RMB)

Risk Identification

- Change in threat
- Technology introduction
- Design cost
- Funding
- Schedule
- Field problems
- Pollution prevention initiatives
- Spare replacement
- Environmental compliance directives

Supporting Processes

- Quality management
- Contract acquisition
- Contract execution

Perform risk assessment analysis

Status change ?

Monitor low and retired risks

Yes

Retire risk ?

Yes

On plan ?

No

No

No

Risk Assessment

System Wide

- Review Analysis
- Assess impact
- Assign levels

Risk level

Med, High

Plan risk mitigations

Implement risk plan

Track progress

Replan

- Change specification
- Re-evaluate impact
- Revise mitigations

- Risk forms
- Watchlist
- Mitigation Plans
- Data Book

Planning, Implementation

.... Risk Management Process from ...

Input

Process

Output

Risk Management Board (RMB)

- Risk Identification**
- Change in threat
 - Technology introduction
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Yes

Retire risk ?

No

Yes

On plan ?

No

Most Program have separate Risk and EV processes

- Risk forms
- Watchlist
- Mitigation Plans
- Data Book

Planning, Implementation

Risk Management Products Overview

Risk Management Board

Risk Form



Risk Assessment Summary

Risk Item Description: Very brief description of the risk item. Be sure to include "Potential for..." instead of implying that risk is actually occurring (unless it is).
Product/Task: Examples: Maintain VS Reliability, Maintain Availability of XXXX
Responsible Individual(IPT: Firstname Lastname/Level 3 IPT Date of Evaluation
Performance Measures: Examples: Voltage at GPR vs. Age, Subsystem Reliability vs. Age

Consequence	Probability of Risk Item Occurring				
	H	M	L	TSC	
	H	1	2	5	
	M	3	4	7	
L	6	8	9		

T: Technical
Consequence if Risk Item Occurs:
High - What will happen if risk item occurs & why it is High (or Medium or Low) in terms of technical risk
Probability of Risk Item Occurring:
Low - What is the probability of it this consequence happening & why it is Low (or High or Medium).
S: Schedule
Consequence if Risk Item Occurs:
High - What will happen if risk item occurs & why it is High (or Medium or Low) in terms of schedul risk
Probability of Risk Item Occurring:
Low - What is the probability of it this consequence happening & why it is Low (or High or Medium).
C: Cost
Consequence if Risk Item Occurs:
High - What will happen if risk item occurs & why it is High (or Medium or Low) in terms of cost risk
Probability of Risk Item Occurring:
Low - What is the probability of it this consequence happening & why it is Low (or High or Medium).

Mitigation Plan:

- Description 1
- Description 2
- Description 3

Risk Quantification Sample

Readiness Projections

Component, Subsystem, and System levels

With Mitigation

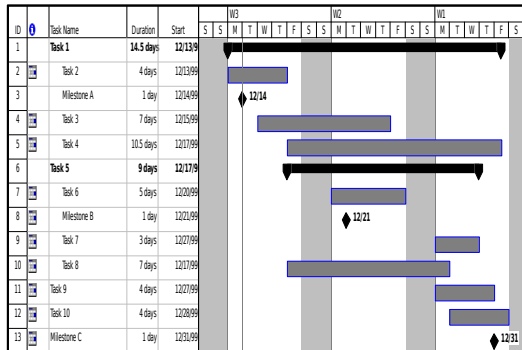
Mitigation

* Readiness is measured in terms of Reliability, Accuracy, and Speed of Response.

Watchlist

Change	Risk ID #	WS	Risk Factor/Opened	Mitig Status	LMC Funding Status	Risk Item Description
New	S98	PK	1 9/9/99			Very short title/phrase. If xxxxxx then, xxxxx (or equivalent impact statement).
M: W to G F: W to G	S99	MM	2 9/9/99	Green	Green	Very short title/phrase. If xxxxxx then, xxxxx (or equivalent impact statement).
M: R to Y	Gr99	Both	3 9/9/99	Yellow SC	Green	Very short title/phrase. If xxxxxx then, xxxxx (or equivalent impact statement).
F: R to Y	Pr99	PK	4 9/9/99	Green	Yellow	Very short title/phrase. If xxxxxx then, xxxxx (or equivalent impact statement).
2 to 4	Gu99	MM	4	Red T	Green	Very short title/phrase. If xxxxxx then, xxxxx (or equivalent impact statement).
Closed	R99	Both	6			Very short title/phrase. If xxxxxx then, xxxxx (or equivalent impact statement).

Mitigation Plans



Wa

Watchlist Count

Risk Factor

IPT	1	2	3	4	5	6
SEIT	#	#	#	#	#	#

Mitigation Status Summary

Mitigation Status	1	2	3
Green	#	#	#
Yellow	#	#	#
Red	#	#	#
Total	#	#	#

Funding Status Summary

Mitigation	Risk Factor
------------	-------------

Watchlist Change Summary

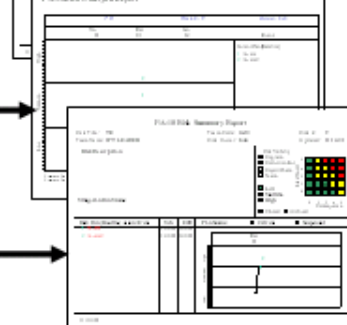
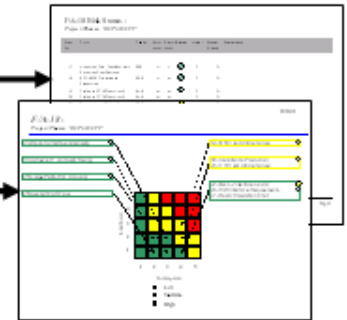
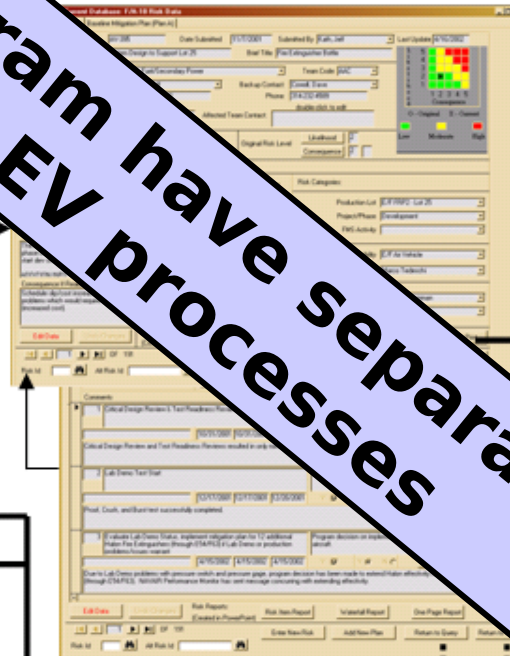
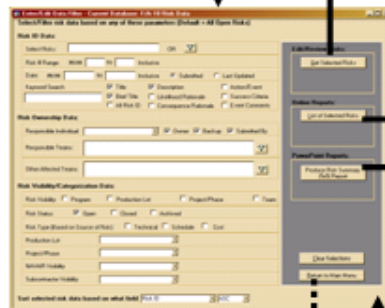
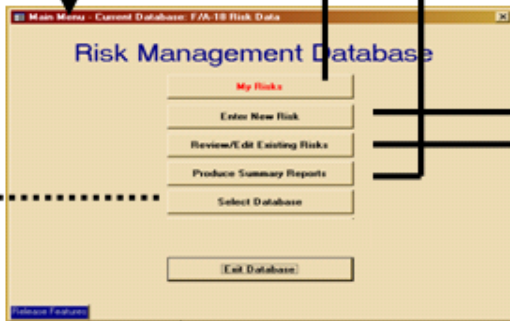
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4	Total
#	##
#	##
#	##
##	###

Most Program and EV processes

Database Navigation

Open application & select database → Main Menu (Select Operation) → Select data for review/edit → Enter, review or edit risk data → Select & get reports

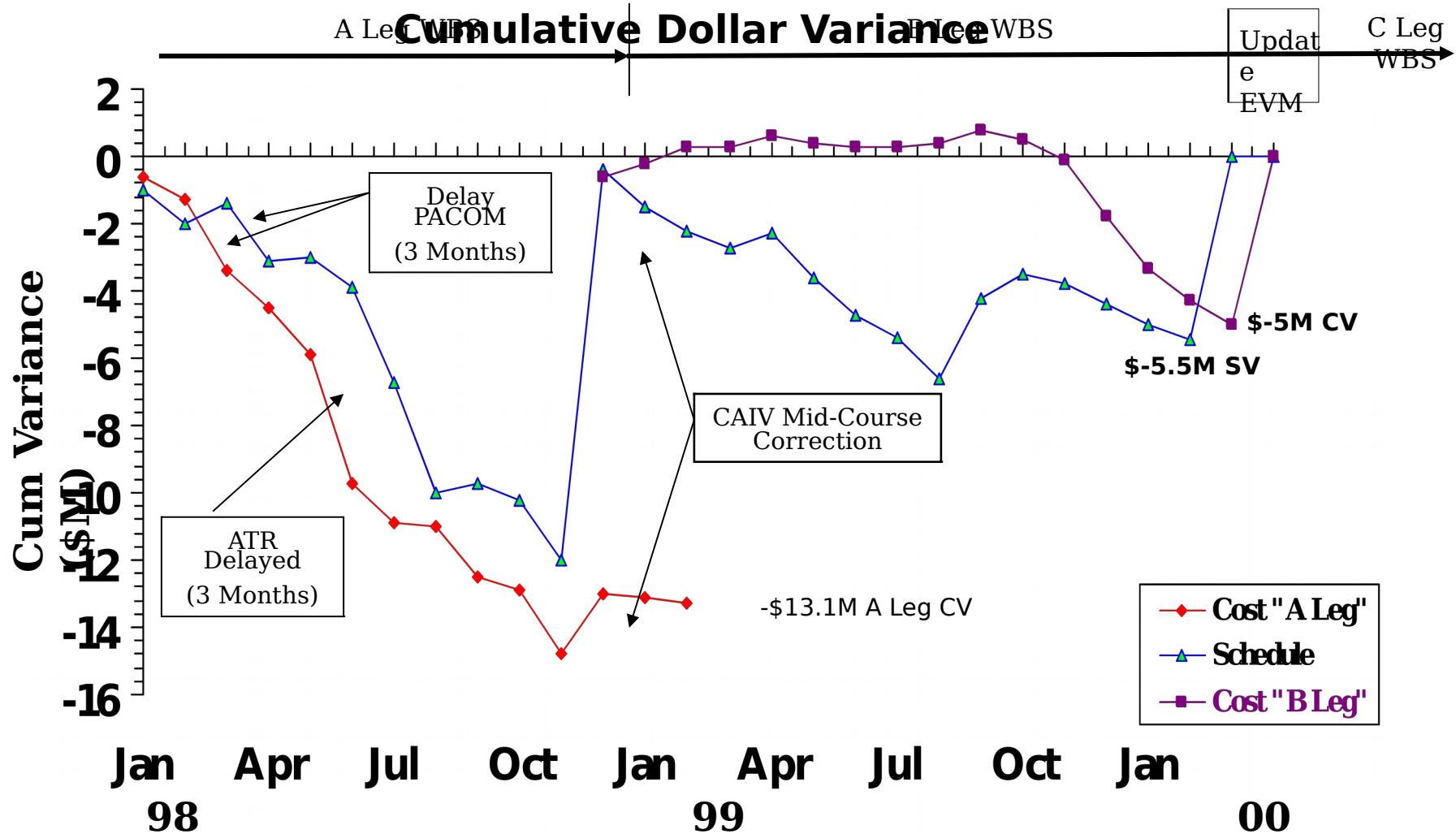


Most Program have separate Risk and EV processes

Outline

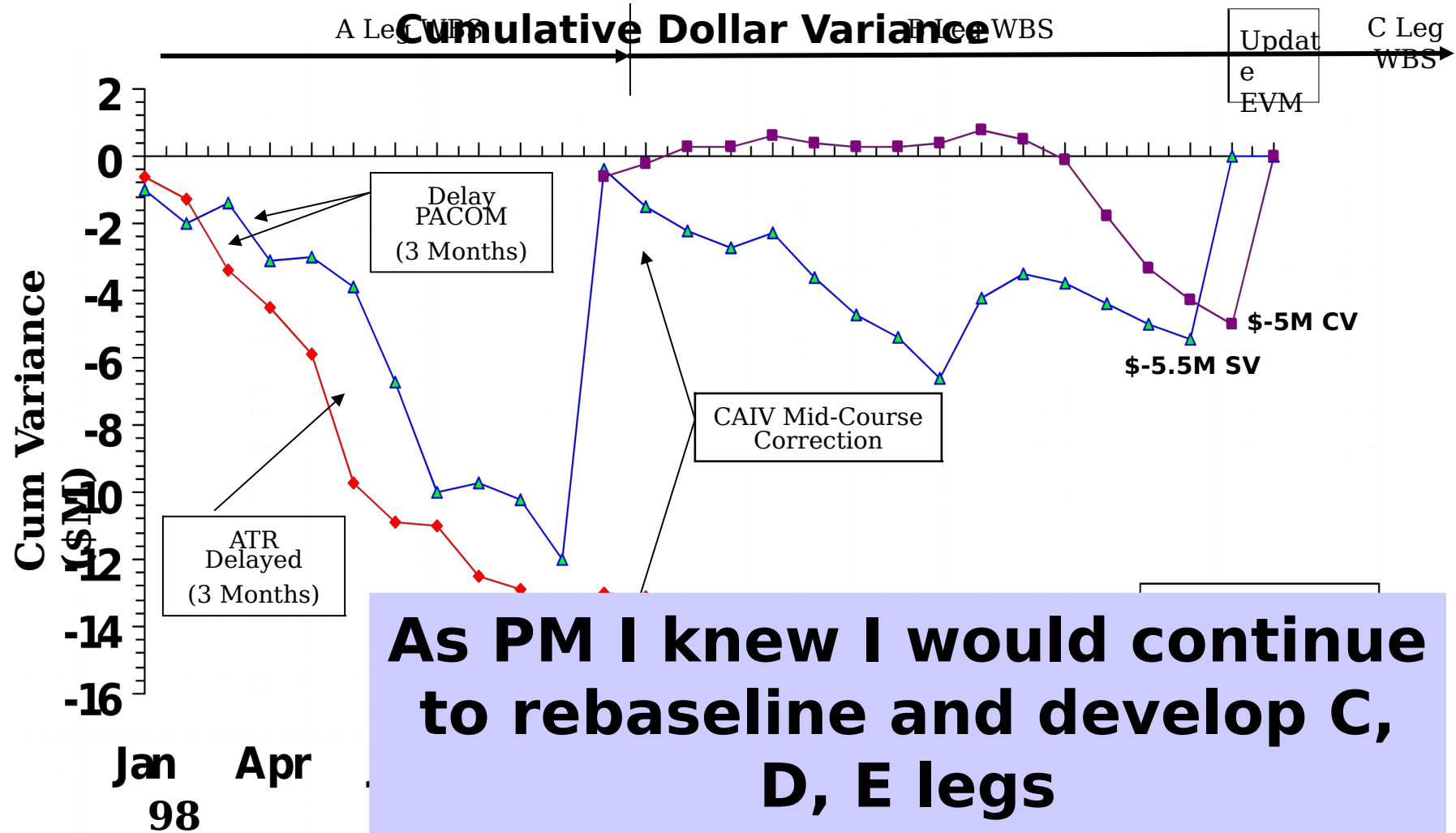
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GBS EVMS Evolution



As of Jun 00
Rebaseline

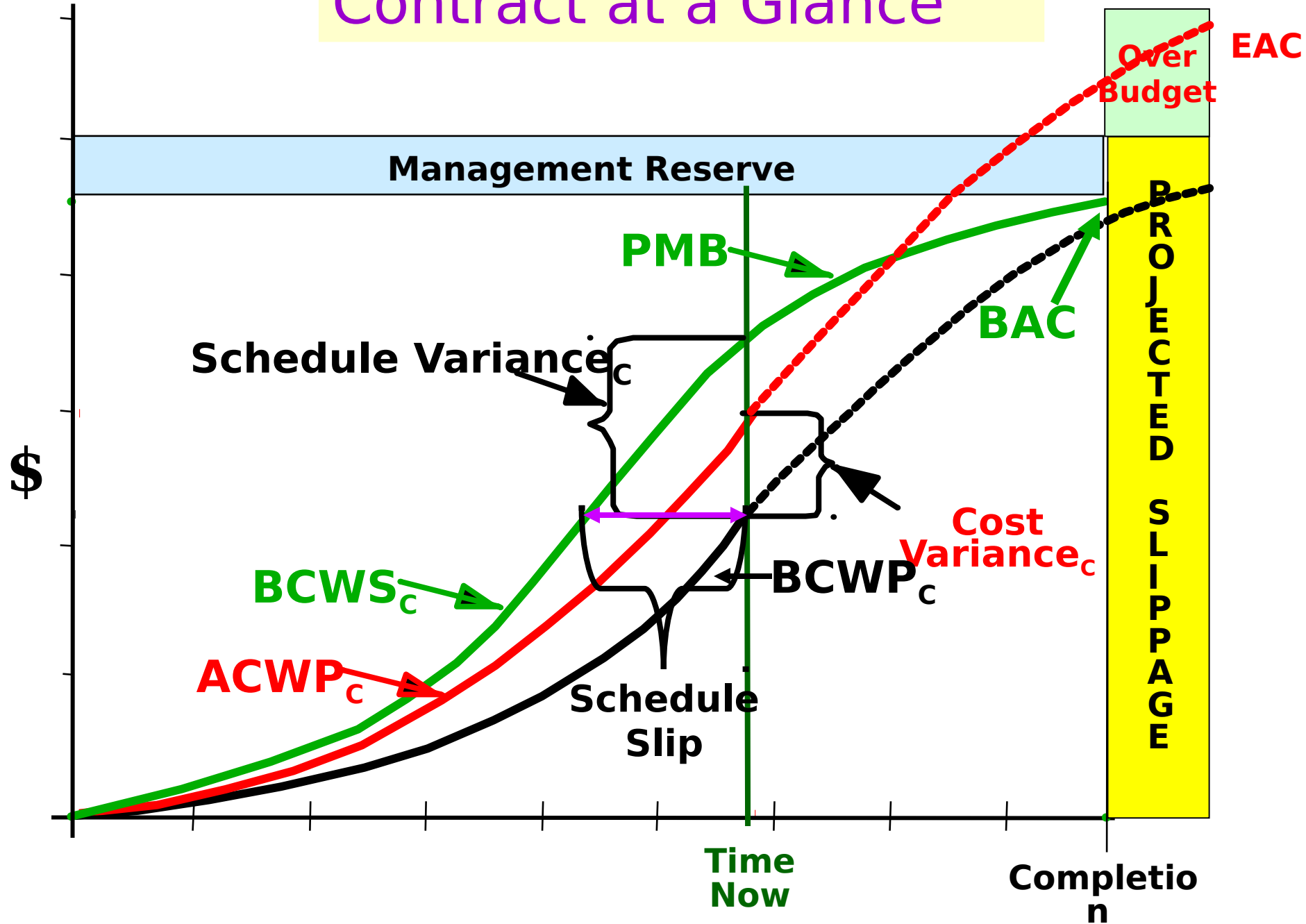
GBS EVMS Evolution



As PM I knew I would continue to rebaseline and develop C, D, E legs

Used Critical Chain - separate EV baseline

Contract at a Glance

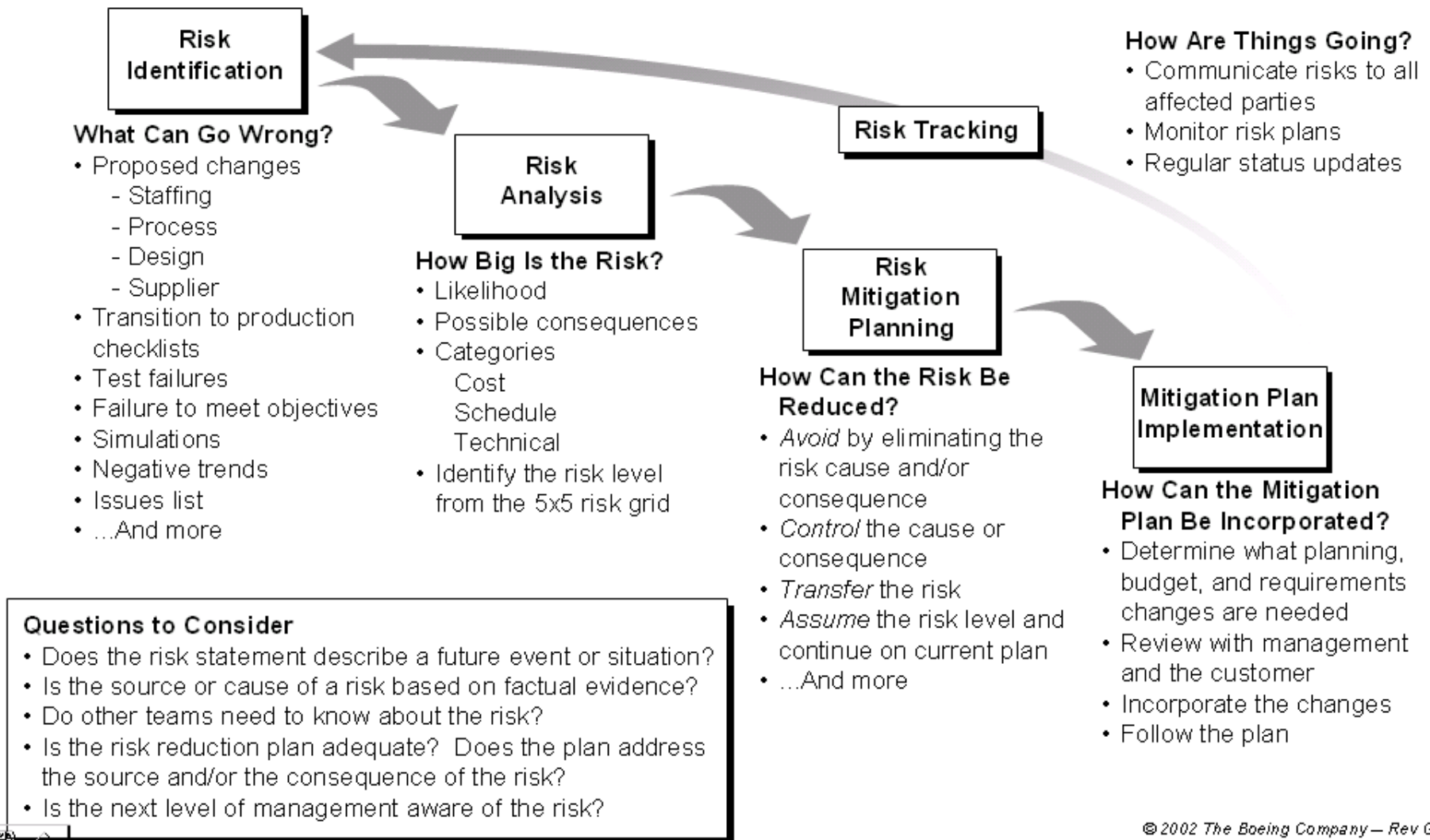


F/A-18 Risk Management Process



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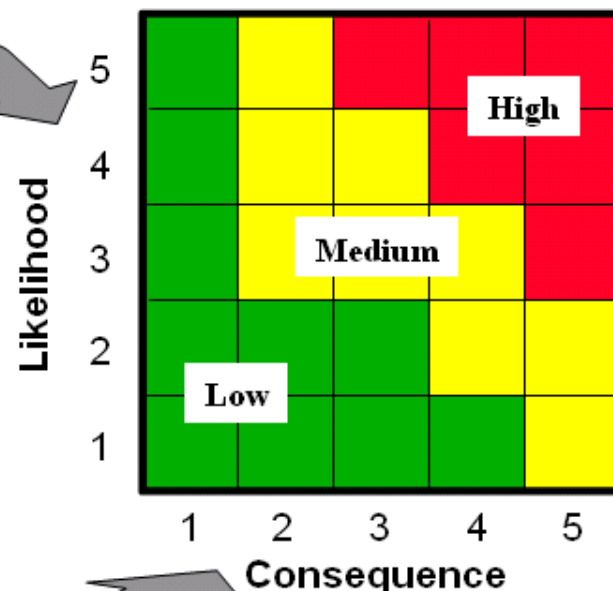
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Jim Huffman	GE	781-594-5724



A-D Air Vehicle POA&M



ID: 4 **Title:** Flight Control Computer (FCC) 10.7 Software Upgrade **Date:** 11/26/01

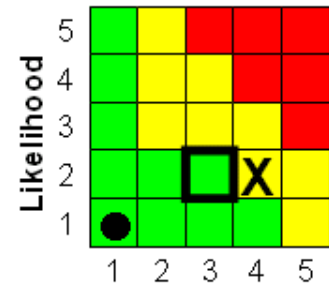
Page: 1 **of** 1 **Status:** Open **Submitted by:** Name 09/06/01

Risk Owner: Risk Owner 123-456-7890 **Team:** Team

Risk Statement: NAWCAD costs have increased to over \$ 1 M.

Root Cause: Increases in the flying hour and tanker rates and the addition of extra test flights.

Consequence: Consequence



Start Current Target

☒ ☐ ☐

Risk Type
(Check One)

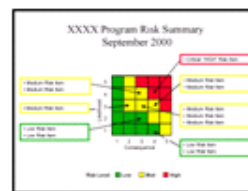
☐ Technical ☒ SDD
☐ Schedule ☐ LRIP
☒ Cost ☐ FRP

Action/Event	Sched Start/Finish	Actual Start/Finish	Success Criteria	Success		Comments
				L/C	Y/N	
1. Working with NAWCAD and Boeing to mitigate the impact of the flying hour and tanker rate increases.						
2.						
3.						



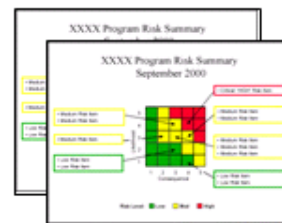
Risk Category/Visibility-Level/Rollup Example

F/A-18 Weapon Systems AIT decides that 2 of the AESA risks affecting E/F Lot 27 production deliveries need program-level attention. (“Program” visibility level is checked.)



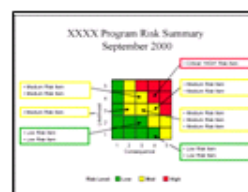
F/A-18 Program-level Risk Summary Chart

Block 2 AIT decides that 3 of the AESA Development risks could affect E/F Lot 26 aircraft provisioning, and 4 of the AESA Production risks could affect E/F Lot 27 production deliveries. (“Production Lot” visibility level is checked.)



E/F Lot 26 & Lot 27 (Production Lot-level visibility) Risk Summary Charts

AESA Program could decide that of the 100 AESA-related risks, 20 are of sufficient importance to merit AESA Program Manager attention. (“Project/Phase” visibility level is checked.)



AESA Program (Project-level visibility) Risk Summary Chart (could be multiple charts)

Team-level risks

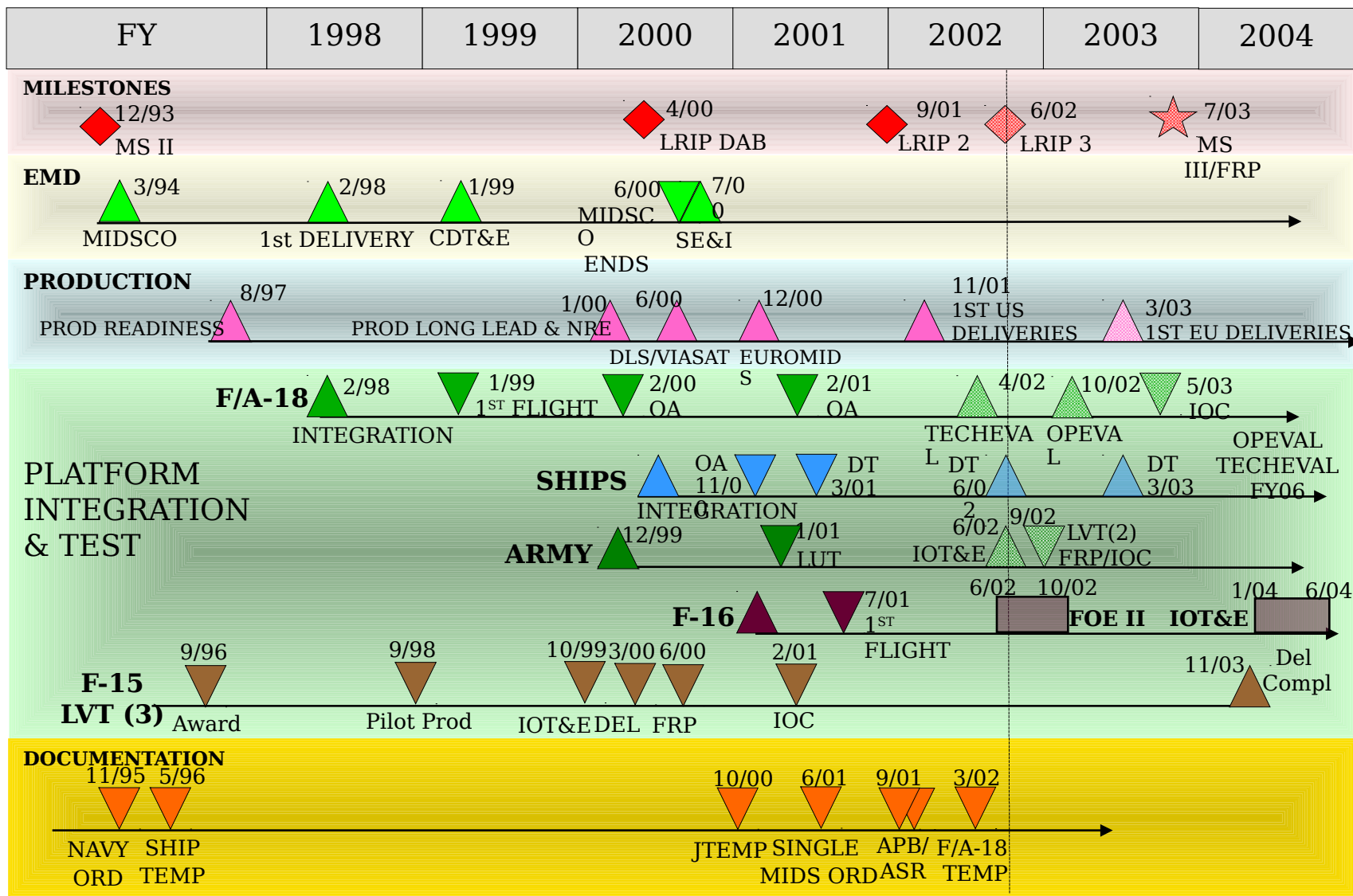
There could be 100 “Team” Risks associated with AESA (Project & Lot fields = AESA Development (Lot 26) or AESA Production (Lot 27).)



Select & get reports



MIDS Program Overview



NOW

COBRA JUDY (O-IPT CHARTS MS A) Risk Assessment

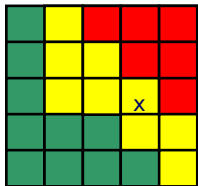
<i>Functional Area</i>	<i>Risk</i>
Technology	
Design and Engineering	
Human Systems	
Support	
Cost¹	
Schedule	
Programmatics²	

¹High risk at current funding levels

²Requires Acquisition Agent designation

MUOS Risk Assessment

Schedule Risk #1

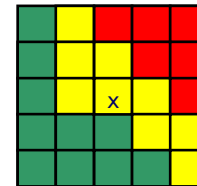


Risk: CAD Contract award delayed

Mitigation Plans:

- Source selection process
- Well defined selection criteria
- Four versions of draft RFP
- MS A scheduled for Aug 02

Schedule Risk #2

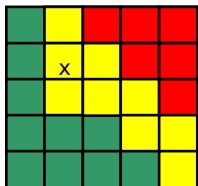


Risk: IOC of July 2008

Mitigation Plans:

- EVMS
- Contract Incentives
- Design off-ramps
- Need funding stability

Cost Risk #1



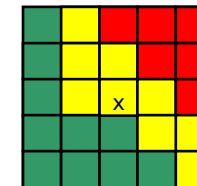
Risk: Cost estimates inaccurate

Mitigation Plans:

- Better system definition
- Fund to CAIG estimate at MS B
- Cross-check PO model

CAD Ktr bottoms-up estimate

Cost Risk #2

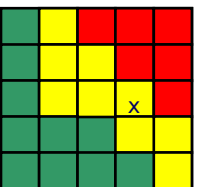


Risk: MUOS Cost Control

Mitigation Plans:

- CAIV
- EVMS
- Multi-year procurement
- Incentives in SD&D

Technical Risk #1

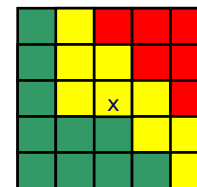


Risk: Software development

Mitigation Plans:

- Software development plan
- SEI Level III certification
- OPTEVFOR EOA
- Independent assessment

Technical Risk #2



Risk: System Integration

Mitigation Plans:

- JTRS MOA
- Modeling/simulation
- CAD demonstrations
- Interface Control IPTs

IPPD ENVIRONMENT

Empowerment

“ Decision making should be driven to the lowest possible level commensurate with risk. Resources should be allocated to levels consistent with risk assessment authority, responsibility & ability of people.

- The team should be given the authority, responsibility, & resources to manage its product & its risk commensurate with the team's capabilities.
- The authority of team members needs to be defined & understood by the individual team members.
- The team should accept responsibility & be held accountable for the results of its efforts.”

IPPD Guide,” 5 Feb 96 - OUSD(DTSE&E)

You get what you measure

Critical Risk Processes

Risk Management Guide 2001

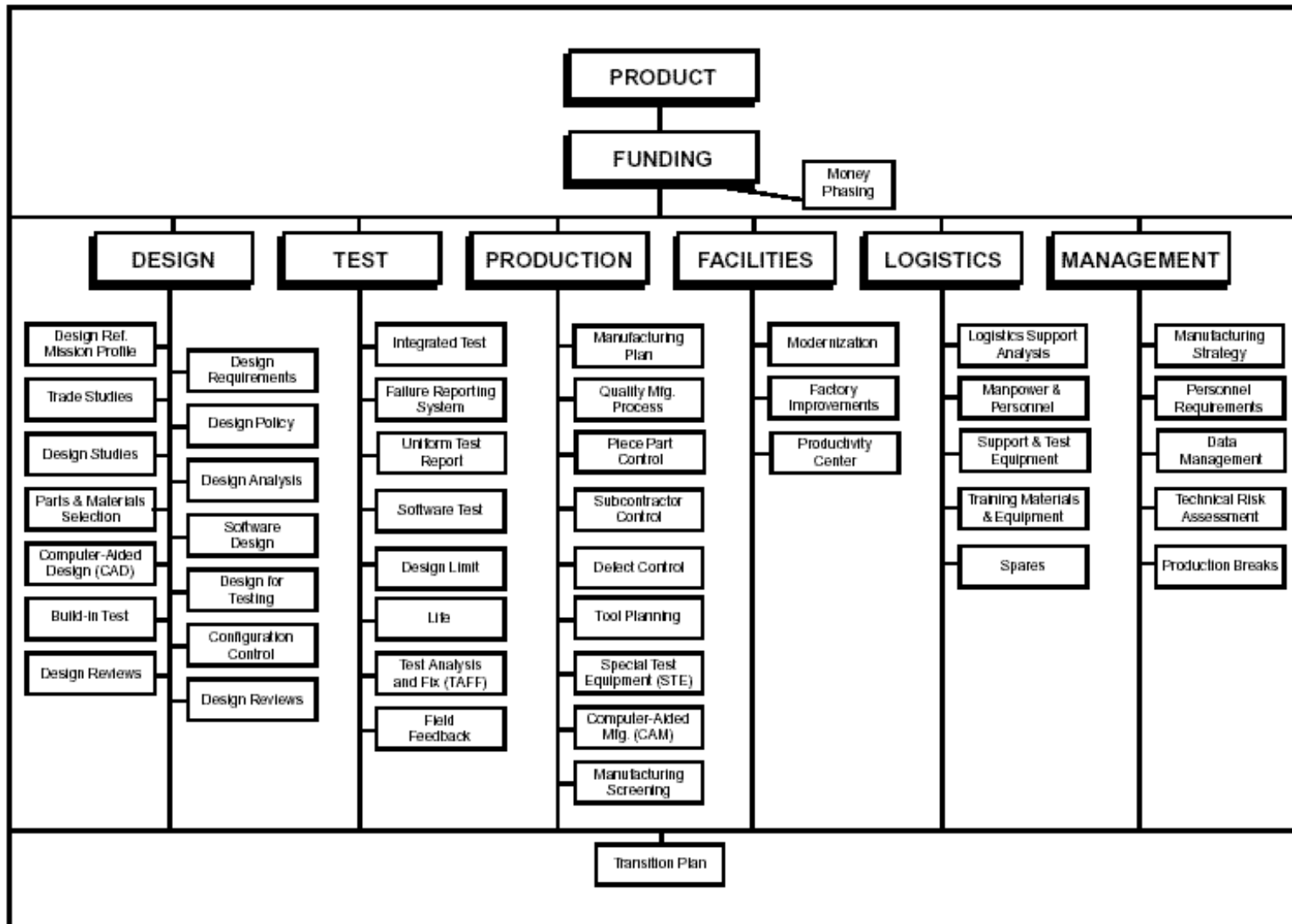


Figure 2-2. Critical Process Areas and Templates

CVN 77 Program Risk Assessment

Likelihood

What is the Likelihood the Risk will happen?		
Level	Chance of Occurrence	Your Approach and Processes
a	Not Likely: 10% chance	...Will effectively avoid this risk based on standard practices
b	Low Likelihood: 25% chance	...Have usually avoided this type of risk with minimal oversight in similar cases
c	Moderate: 50% chance	...May avoid this risk, but workarounds will be required
d	Highly Likely: 75% chance	...Cannot avoid this risk with standard practices, but a different approach may work
e	Near Certainty: 90% chance	...Cannot avoid this risk with standard practices, probably not able to mitigate

Likelihood	e					
	d					
	c					
	b					
	a					
		1	2	3	4	
		5 Consequence				

Given the risk is realized, what would be the magnitude of the impact?

Consequence

Level	Technical Performance	Schedule Impact	Cost Millions
1 Negligible	Small performance shortfall in specific technical area; overall system performance unaffected	Minimal schedule slip but able to meet need dates w/o additional resources. Critical path unaffected	Cost increase <1
2 Marginal	Minor performance shortfall in specific technical area; overall system performance below goal but w/in acceptable limits	Minor schedule slip; will miss need date. Critical path unaffected	Cost increase 1-6
3 Moderate	Mod performance shortfall in specific technical area; overall system performance below acceptable limits & possible below acceptable limits	Major schedule slip. Program critical path affected (<1 month)	Cost increase 6-20
4 Critical	Overall system performance below acceptable limits	Major schedule slip. Program critical path affected (>1 month)	Cost increase 21-50
5 Catastrophic	Overall system performance unacceptable to the degree that the ship is undeliverable	Major schedule slip. Program critical path affected (>1 month)	Cost increase >50

	HIGH --Major program disruption, immediate priority management action required.
	MODERATE --Moderate disruption, possible management action required
	LOW --Minimum impact

Questions about Risk Management?

Call Systems Engineering - Risk Management,
Dept. E47

Steve Waddell, NNS 757-688-3760

NSSN Risk Assessment Process

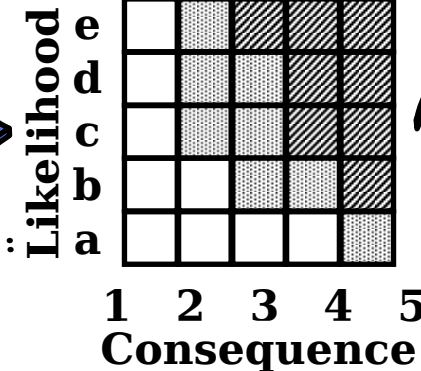
Questions about Risk Management?

Call a Member of the Process Integration Team for Risk.

LIKELIHOOD:

Level	What Is The Likelihood
Happen?	The Risk Will Remote
b	Unlikely
c	Likely
d	Highly Likely
e	Near Certainty

ASSESSMENT GUIDE



RISK ASSESSMENT

 **HIGH** - Unacceptable. Major disruption likely. Different approach required. Priority management attention required.

 **MODERATE** - Some disruption. Different approach may be required. Additional management attention may be needed.

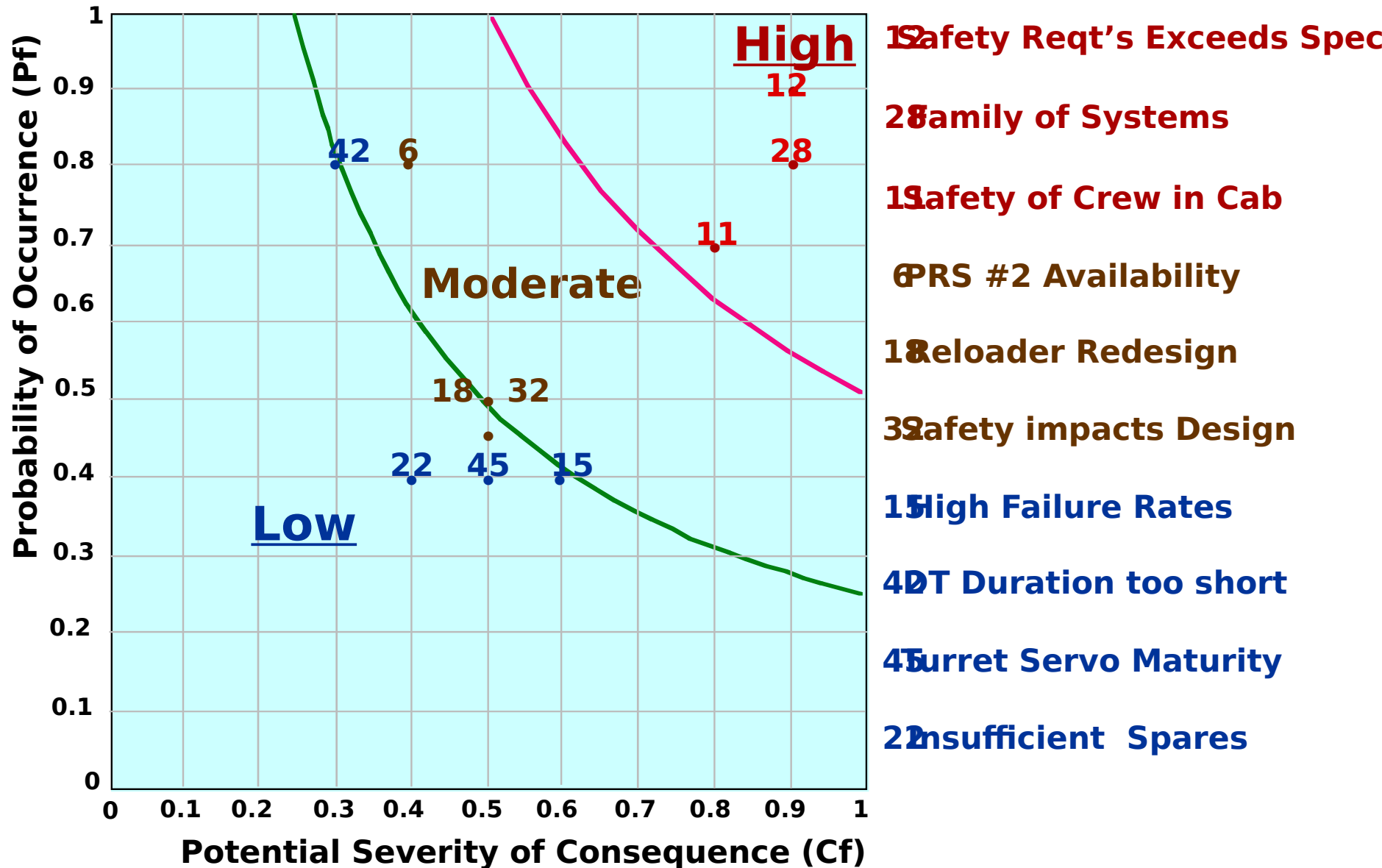
 **LOW** - Minimum impact. Minimum oversight needed to ensure risk remains low.

CONSEQUENCE:

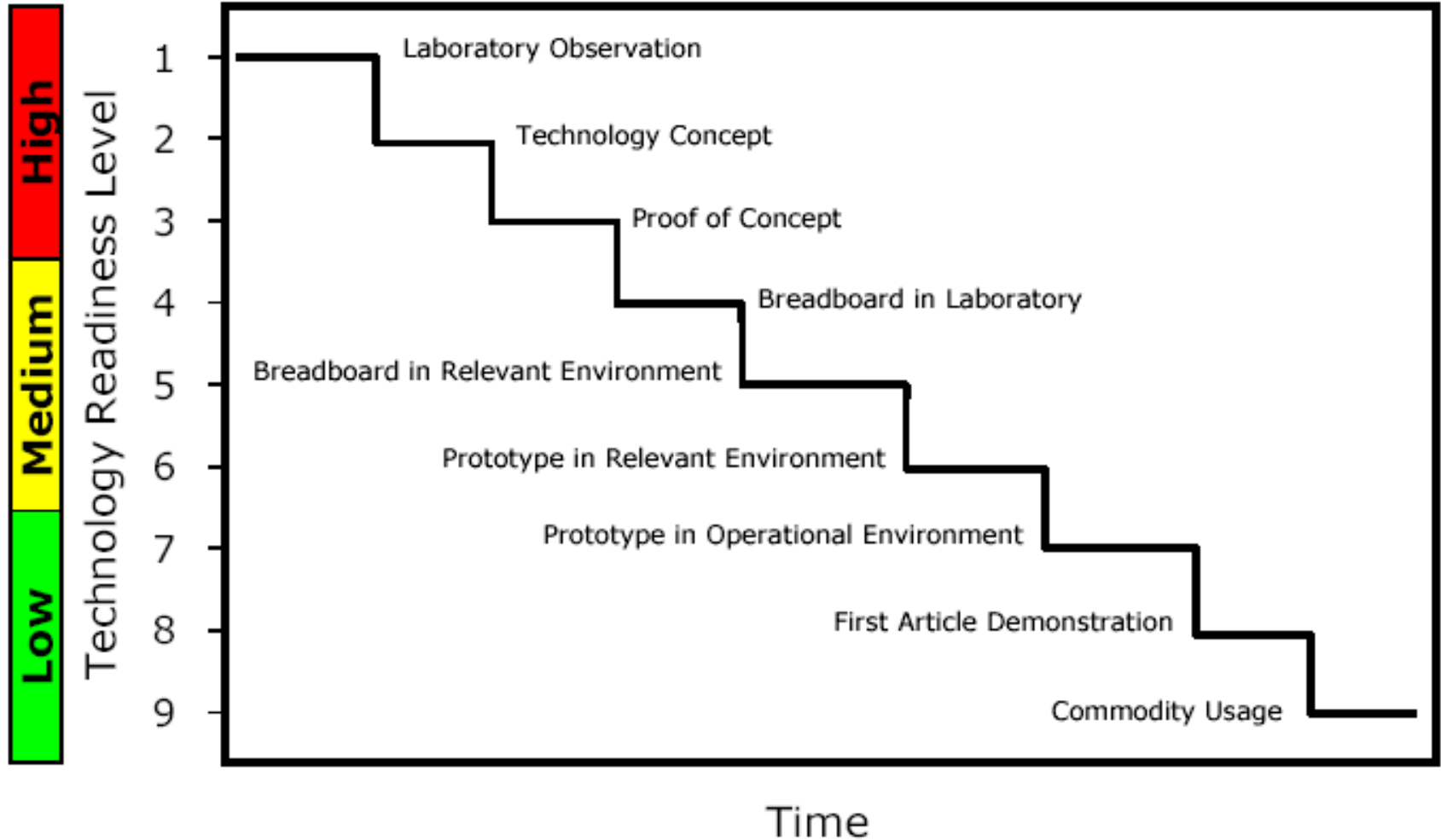
Given The Risk is Realized, What is the Magnitude of the Impact?

Level	Technical and/or Impact on Other Teams	Schedule and/or Performance	and/or Cost
1	Minimal or No Impact	Minimal or No Impact	Minimal or No Impact
2	Acceptable with Some Reduction in Margin	Additional Resources Required ; Able to Meet Need Dates	Some Impact
3	Acceptable with Significant Reduction in Margin	Minor Slip in Key Milestone; Not Able to Meet Need Dates	Moderate Impact
4	Acceptable, No Remaining Margin	Major Slip in Key Milestone or Critical Path Impacted	Major Impact
5	Unacceptable	Can't Achieve Key Team or Major Program Milestone	Unacceptable

CLAWS Top Risks



Risk Waterfall



VISUALIZING PROJECT MANAGEMENT

A MODEL FOR BUSINESS
AND TECHNICAL SUCCESS

SECOND EDITION

KEVIN FORSBERG
HAL MOOZ, PMP
AND
HOWARD COTTERMAN

FOREWORD BY NORMAN R. AUGUSTINE
RETIRED CHAIRMAN AND CEO
LOCKHEED MARTIN CORPORATION



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		Adverse Consequence		
		Low	Medium	High
Probability of Failure	High	Establish contingency plans <i>Status Regularly</i>	Establish contingency plans <i>Act Immediately if Cost Effective</i>	Unacceptable <i>Take Immediate Action</i>
	Medium	Acceptable, Do Nothing <i>Status Regularly</i>	Establish contingency plans <i>Status Frequently</i>	Establish contingency plans <i>Act Immediately if Cost Effective</i>
	Low	Acceptable, Do Nothing <i>Status Occasionally</i>	Establish contingency plans <i>Status Regularly</i>	Establish contingency plans <i>Act Immediately if Cost Effective</i>

FIGURE 7.43 Sample risk decision matrix.